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contents

New beginnings

As many of you are gaining momentum in the new academic year – new faces in the classroom, some tweaks to the lesson plans and materials – we at *Teacher Plus* too have an infusion of something new. As you may imagine, the magazine is more than a collection of words and images laid out on paper. It's a community that has at its core a small group of people who clack away at their keyboards writing to subscribers, packing and mailing copies, and managing the editorial flow. Our regular and occasional contributors and columnists form the next layer of this community, held in place by that largest group, our readers. It's been a small but fairly stable gathering that's exchanged ideas around education for the better part of two decades. Now, after 15 years of working together, our core team has had to say goodbye to one of our longest-serving members – Nirmala M, who was the editorial hand (and mind) behind several issues and whose gentle nudging and querying prompted contributors to keep to deadlines and clarify their writing. Nirmala came to *Teacher Plus* in 2006 after many years at *The Hindu* and brought the rigor of that copy desk to shape the way we functioned in this much, much smaller unit. We're sad to see her go and wish her the best as she moves on to other things. But our work must go on too, and we are welcoming with this issue another editorial member, Nimesh Ved, an educator with many years of experience and whose writing you would have already encountered in the magazine. Nimesh, along with Shalini, will continue to be in touch with our writers and to respond to others who wish to contribute to the magazine – if you have thought about this and have not done anything yet, please do write to them and pitch an article. Longtime subscribers and readers will know that we offer an open and eclectic space within which we can learn together and try to initiate the small, incremental changes in our classrooms, schools, and broader communities to making a better world.

In this issue of the magazine, we indulge in a bit of introspection around the question of what difference schools make – as institutions that are expected to make a contribution to human development, and more indirectly, to political and cultural understanding, and economic growth. As teachers it's hard to keep sight of just how important we are in this ongoing project of world building – what we do in classrooms can change how individuals think and go about their way in life, and by extension, how societies are shaped. Maybe the big picture is hard to grasp, but we can turn our gaze to the immediate spaces we occupy and see how they can become truly welcoming spaces for all children, for all stakeholders.

Usha Raman

Table patterns

Neeraj Naidu

A mathematician, like a painter or poet, is a maker of patterns. **– G.H.Hardy**

Cramming multiplication tables is an utterly meaningless task. In a primary level mathematics class, children singing multiplication tables like a song is a common sight. Math teachers not only insist but force children to memorize the tables at least up to 20.

Well, it definitely speeds up calculations and thus helps solve textbook problems quickly. But what is the point? Calculation is not mathematics at all. It is a fragment of a fragment of a fragment perhaps.

First thing that we can do in a math classroom is to clear the air and show children that there is no need to hopelessly memorize the tables. If you can add numbers, you can very well multiply because multiplication is just repetitive addition.

However, let's not reject the tables entirely. They could just prove to be a perfect tool to find and see beautiful patterns, something inherent to mathematics.

Let's take an example:

9 x 1 = 09	19 x 1 = 19	29 x 1 = 29
9 x 2 = 18	19 x 2 = 38	29 x 2 = 58
9 x 3 = 27	19 x 3 = 57	29 x 3 = 87
9 x 4 = 36	19 x 4 = 76	29 x 4 = 116
9 x 5 = 45	19 x 5 = 95	29 x 5 = 145
9 x 6 = 54	19 x 6 = 114	29 x 6 = 174
9 x 7 = 63	19 x 7 = 133	29 x 7 = 203
9 x 8 = 72	19 x 8 = 152	29 x 8 = 232
9 x 9 = 81	19 x 9 = 171	29 x 9 = 261
9 x 10 = 90	19 x 10 = 190	29 x 10 = 290

What do you SEE?

The standard (numbers being multiplied to numbers from 1 to 10) multiplication table of 9, 19, and 29, right?
Perfect. But can you see anything else in the multiplication tables?

You can, can't you? It's because we all have a gift to see patterns, the great gift of mathematics.

Some of the things you might have observed are:
- All three numbers (9, 19, and 29) have 9 in their units place.
- The common difference between the numbers is 10: 29-19 = 19-9 = 10.
- Repetitive addition: $9+9=18$, $18+9=27$, $27+9=36$... $19+19=38$, $38+19=57$....
- 29-19 = 19-9 = 10, 58-38 = 38-18 = 10x2 = 20, 87-57 = 57-27 = 10x3 = 30....The difference goes on like: 10, 20, 30, 40, 50, 60, ... as the multiplication progresses.
- When 9, 19, and 29 are multiplied with an odd number, the result is always odd and when multiplied with an even number, the result is always even. Does this mean odd x odd = odd and odd x even = even? Can we generalize just by the results we have? Or do we need more numbers to prove it? Or can there be any method to prove this conjecture?
- Anything more?

Let me write the same tables with some space between the digits.

9 x 1 = 09	19 x 1 = 19	29 x 1 = 29
9 x 2 = 18	19 x 2 = 38	29 x 2 = 58
9 x 3 = 27	19 x 3 = 57	29 x 3 = 87
9 x 4 = 36	19 x 4 = 76	29 x 4 = 116
9 x 5 = 45	19 x 5 = 95	29 x 5 = 145
9 x 6 = 54	19 x 6 = 114	29 x 6 = 174
9 x 7 = 63	19 x 7 = 133	29 x 7 = 203
9 x 8 = 72	19 x 8 = 152	29 x 8 = 232
9 x 9 = 81	19 x 9 = 171	29 x 9 = 261
9 x 10 = 90	19 x 10 = 190	29 x 10 = 290

What do you think now?

You must have remembered or perhaps observed this trick that the multiplication table of 9 does. The unit place digits decrease – 9, 8, 7, 6, 5, 4, 3, 2, 1, 0.
Is it the same case with 19 and 29?
Oh yes! In both the numbers, the results have unit

place decreasing – 9, 8, 7, 6, 5, 4, 3, 2, 1, 0. Do you think 39, 49, and 59 will also follow this pattern?

Yes? So, can we make an assumption that the numbers in the unit place decrease by 1 each time? Let's call this Assumption 1.

Now looking at the results, what do you think about the numbers written on the left of the unit place. Do you see any pattern?

Yes? In the table of 9, can you see the numbers go up? 0, 1, 2, 3, 4, 5, 6, 7, 8, 9? So, can we say that the numbers increase by 1 each time? Let's call this Assumption 2.

Similarly, in the table of 19, you can see this pattern: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19. Each time the numbers increase by 2. And thus, following the pattern, in the table of 29 the numbers should increase by 3 each time: 2, 5, 8, 11, 14, 17, 20, 23, 26, 29.

Is it like this:

Now that you have made some assumptions or let's say established some patterns, let's see what happens when we do some more multiplication.

9 x 1 = 0 9	19 x 1 = 1 9	29 x 1 = 2 9
9 x 2 = 1 8	19 x 2 = 3 8	29 x 2 = 5 8
9 x 3 = 2 7	19 x 3 = 5 7	29 x 3 = 8 7
9 x 4 = 3 6	19 x 4 = 7 6	29 x 4 = 11 6
9 x 5 = 4 5	19 x 5 = 9 5	29 x 5 = 14 5
9 x 6 = 5 4	19 x 6 = 11 4	29 x 6 = 17 4
9 x 7 = 6 3	19 x 7 = 13 3	29 x 7 = 20 3
9 x 8 = 7 2	19 x 8 = 15 2	29 x 8 = 23 2
9 x 9 = 8 1	19 x 9 = 17 1	29 x 9 = 26 1
9 x 10 = 9 0	19 x 10 = 19 0	29 x 10 = 29 0
9 x 11 = 9 9	19 x 11 = 20 9	29 x 11 = 31 9
9 x 12 = 10 8	19 x 12 = 22 8	29 x 12 = 34 8
9 x 13 = 11 7	19 x 13 = 24 7	29 x 13 = 37 7
9 x 14 = 12 6	19 x 14 = 26 6	29 x 14 = 40 6
9 x 15 = 13 5	19 x 15 = 28 5	29 x 15 = 43 5

Does the pattern we have established break anywhere?

Does this mean both the assumptions we made are wrong?

The numbers in the unit place stop decreasing by 1 when 9, 19, and 29 are multiplied with 11. Instead, the pattern 9, 8, 7, 6, 5, 4, 3, 2, 1, 0 is repeated again. This falsifies Assumption 1.

Let's talk about Assumption 2.

Can you see that our assumption of the increase in number (left to unit place) has not been followed when we multiply the numbers with 11? However, the pattern is broken in a sort of pattern again. In the table of 9 the increase has dropped from 1 to 0, in 19, the drop is from 2 to 1 and in 29, the drop is from 3 to 2, which means in all three numbers there is a decrease of 1.

Strangely after multiplication with 11, all the results follow the pattern according to Assumption 2.

Does this mean Assumption 2 is also invalid?

Is there a reason why the pattern breaks? Or there is actually no pattern and we are pointlessly stressing on finding them?

Think. Can we trust mathematics?

Does the pattern really break? Or it doesn't and we have made a silly mistake?

Yes. The mistake is in our observation. (It is also possible that you did not make the mistake and made the correct observation. I am just trying to highlight the case of making this mistake, which usually happens in my classroom. Anyway, mistakes are a good thing.)

What is on the left of the unit place?

The tens place, right?

Shouldn't the pattern be like:

Do you think Assumption 1 we've made earlier and falsified later is actually not incorrect? The numbers in the unit place keep decreasing by 1. We can definitely decrease from zero and move to negative numbers.

Now in the tens place, the numbers keep increasing not by 1 but by 10. For example: in 43, the ten's place digit is 4 and it means four tens which means 40.

Similarly, for 19, the increase in tens place is by 20. And for 29, the increase in tens place is by 30.

Hence Assumption 2 is incorrect and now we can frame a new pattern that might not break.

I hope this pattern doesn't break. It doesn't seem like it. But how could we know for sure? We can't keep multiplying till eternity.

I hope you'll find more patterns in this. Let me finish this particular example with one more beautiful pattern.

```
9 x  1 =  0 9      19 x  1 =    1 9      29 x  1 =   2 9      39 x  1 =   3 9
9 x  2 =  1 8      19 x  2 =    3 8      29 x  2 =   5 8      39 x  2 =   7 8
9 x  3 =  2 7      19 x  3 =    5 7      29 x  3 =   8 7      39 x  3 = 11 7
9 x  4 =  3 6      19 x  4 =    7 6      29 x  4 = 11 6      39 x  4 = 15 6
9 x  5 =  4 5      19 x  5 =    9 5      29 x  5 = 14 5      39 x  5 = 19 5
9 x  6 =  5 4      19 x  6 = 11 4      29 x  6 = 17 4      39 x  6 = 23 4
9 x  7 =  6 3      19 x  7 = 13 3      29 x  7 = 20 3      39 x  7 = 27 3
9 x  8 =  7 2      19 x  8 = 15 2      29 x  8 = 23 2      39 x  8 = 31 2
9 x  9 =  8 1      19 x  9 = 17 1      29 x  9 = 26 1      39 x  9 = 35 1
9 x 10 =  9 0      19 x 10 = 19 0      29 x 10 = 29 0      39 x 10 = 39 0

9 x  1 = 0 9       19 x  1 =    1 9      29 x  1 =   2 9      39 x  1 =   3 9
9 x  2 = 1 8       19 x  2 =    3 8      29 x  2 =   5 8      39 x  2 =   7 8
9 x  3 = 2 7       19 x  3 =    5 7      29 x  3 =   8 7      39 x  3 = 11 7
9 x  4 = 3 6       19 x  4 =    7 6      29 x  4 = 11 6      39 x  4 = 15 6
9 x  5 = 4 5       19 x  5 =    9 5      29 x  5 = 14 5      39 x  5 = 19 5
9 x  6 = 5 4       19 x  6 = 11 4      29 x  6 = 17 4      39 x  6 = 23 4
9 x  7 = 6 3       19 x  7 = 13 3      29 x  7 = 20 3      39 x  7 = 27 3
9 x  8 = 7 2       19 x  8 = 15 2      29 x  8 = 23 2      39 x  8 = 31 2
9 x  9 = 8 1       19 x  9 = 17 1      29 x  9 = 26 1      39 x  9 = 35 1
9 x 10 = 9 0       19 x 10 = 19 0      29 x 10 = 29 0      39 x 10 = 39 0

9 x  1 = 0 9       19 x  1 =    1 9      29 x  1 =   2 9      39 x  1 =   3 9
9 x  2 = 1 8       19 x  2 =    3 8      29 x  2 =   5 8      39 x  2 =   7 8
9 x  3 = 2 7       19 x  3 =    5 7      29 x  3 =   8 7      39 x  3 = 11 7
9 x  4 = 3 6       19 x  4 =    7 6      29 x  4 = 11 6      39 x  4 = 15 6
9 x  5 = 4 5       19 x  5 =    9 5      29 x  5 = 14 5      39 x  5 = 19 5
9 x  6 = 5 4       19 x  6 = 11 4      29 x  6 = 17 4      39 x  6 = 23 4
9 x  7 = 6 3       19 x  7 = 13 3      29 x  7 = 20 3      39 x  7 = 27 3
9 x  8 = 7 2       19 x  8 = 15 2      29 x  8 = 23 2      39 x  8 = 31 2
9 x  9 = 8 1       19 x  9 = 17 1      29 x  9 = 26 1      39 x  9 = 35 1
9 x 10 = 9 0       19 x 10 = 19 0      29 x 10 = 29 0      39 x 10 = 39 0
```

This next one is for you.

11 x 1 = 11	21 x 1 = 21	31 x 1 = 31
11 x 2 = 22	21 x 2 = 42	31 x 2 = 62
11 x 3 = 33	21 x 3 = 63	31 x 3 = 93
11 x 4 = 44	21 x 4 = 84	31 x 4 = 124
11 x 5 = 55	21 x 5 = 105	31 x 5 = 155
11 x 6 = 66	21 x 6 = 126	31 x 6 = 186
11 x 7 = 77	21 x 7 = 147	31 x 7 = 217
11 x 8 = 88	21 x 8 = 168	31 x 8 = 248
11 x 9 = 99	21 x 9 = 189	31 x 9 = 279
11 x 10 = 110	21 x 10 = 210	31 x 10 = 310
11 x 11 = 121	21 x 11 = 231	31 x 11 = 341
11 x 12 = 132	21 x 12 = 252	31 x 12 = 372
11 x 13 = 143	21 x 13 = 273	31 x 13 = 403
11 x 14 = 154	21 x 14 = 294	31 x 14 = 434
11 x 15 = 165	21 x 15 = 315	31 x 15 = 465

See and find patterns. Are there any striking similarities and dissimilarities in the 11-21-31 series and the 9-19-29 series? Can you make more examples like this that brings the hidden art of mathematics to light?

The author works with children in and out of schools. He is interested in children's literature, mathematics, libraries, and radical pedagogies. He can be reached at <irockmad@gmail.com>.

Photo: Pritam Benjamin

Measuring school effectiveness
The purpose, need, and the road ahead

Nupur Hukmani

In this article, I attempt to present the literature on school effectiveness and how its definition and process have changed over the years; why it is so important to relook the lens through which we measure the effectiveness of schools and to assess some concrete ways of going about that.

The other day I was in a conversation with a mother of a student in the school I teach. I am the child's class teacher. She wanted to speak to me about her child's progress, which to me was proof of her investment in her child's education. She started the conversation by letting me know how difficult it had been for her to put her child in a "good" school against a slew of religious, financial, and family constraints. She had stood up for her daughter in more ways than one so that her child could receive an education that would help her out of the cycle of poverty and dogma.

I updated her about her daughter's academic progress in various subjects; I jubilantly informed her about the several extra-curricular activities the child was good at and I proudly exclaimed how her daughter exemplified values of respect, excellence, hard work, and collaboration. She seemed unmoved. "That's great! But does she understand the struggles and restraints that exist in life despite which she is lucky enough to get an excellent education? Does she understand that only a good education will remove some of these constraints?"

Schools are important institutions in society. Right from the individual citizen to schools themselves, society, and at a larger level the government, all stakeholders want to know how effective they are. In most societies, schools are mainly assessed on the basis of whether they teach foundational numeracy and literacy to students in an environment that is

structured and functional. For example, in India, we have the ASER survey, which is an education survey conducted to provide a glimpse of how India's children are faring in literacy and numeracy and whether there is basic infrastructure in place, such as a playground, well-maintained toilets, or access to mid-day meals. Over the years, this national survey has provided essential school effectiveness data that subsequently informs education policy in India. At the global level, we have surveys like Program for International Student Assessment (PISA) that measures reading, math, and science to rank countries on these student achievement outcomes.

No doubt student achievement and school infrastructure data are significant to assess the effectiveness of schools, and in turn the effectiveness of the related education policy, but these are rudimentary data points or just performance indicators in measuring the *development* of an entire human being and the larger society. There are so many functions that schools must serve including but not limited to building a personal value system in students, providing them with ample exposure to build knowledge, skills and mind-sets to become purposeful, skilled, and socially conscious individuals. Schools are responsible spaces to build long-term outcomes like creating an employable force that will contribute to nation-building. They are responsible for constructing community consciousness. With such gigantic responsibility resting on schools, it is surprising that student achievement is often the only measure of school effectiveness that we focus on.

The conversation with the parent got me thinking about the purpose of education and the role of schools in our society. It made me realize how effective schools are not a norm but an anomaly. However, the bigger question that got me thinking was, how do we define "effective schools" and measure their effectiveness? A pioneering study on the effectiveness of schools called the *Coleman Report*, carried out in the 70s concluded that "schools make no difference". The report established that the most important predictor of student outcomes was not the school or its resources, but the child's home life and family. More recently, however, research everywhere tells us that schools do affect and build a child's overall development. Hence, we now see observable patterns between effective schools and education policies all over the world that are being directionally informed through these patterns.

There are currently three types of school effectiveness research – *School Effects Research* (to analyze the relation between input and output measures of existing schools to study their effects), *Effective Schools Research* (to study effective schools and the nature of their effectiveness), and *School Improvement Research* (studying processes to improve existing schools).

All of us at some point have complained about the education system not doing its job of ensuring an engaging, fear-free environment, devoid of the pressures of competition, away from the shackles of bureaucracy, and one that pushes children to reach their full potential. We have innumerable stories of systemic failures and many reasons to blame this complex system which more often than not feels like it is resistant to any change. Even though literacy may have increased post-independence, the Indian education system has to grapple with essential questions like "Do students even like coming to school?" and "Is the classroom a place that connects them to life?" We all know the answer to these questions in most cases is a resounding no. However, we also have many schools and experiments in India as part of a growing alternative schooling movement that is trying to change this. They focus on ensuring that the child (even the most disadvantaged) relishes coming to school and not just cope with it.

Montessori's work with orphaned and handicapped children in Italy was directly able to influence the rural program of the Centre for Working Children in Karnataka and is currently a preferred methodology in Early Childhood Care and Education (ECCE) all over the country. Pragat Shikshan Mandal (PSS) in Maharashtra adopted Sylvia Ashton-Warner's reading methodology outlined in her classic book *Teacher*, which describes her trial and error to teach disadvantaged Maori students in New Zealand, to improve reading outcomes in government schools. Many others set up alternative schools or methods in different parts of the country and introduced radical ways of teaching, sometimes within existing schools. Jiddu Krishnamurthy and Sri Aurobindo were pioneers in this area. More recently, we have witnessed the work of alternate education in India be it the *Hoshangabad Science Teaching Program* in Madhya Pradesh, David Horsburgh's *Neel Bagh* and *Vikasana* inspired from that in Bangalore, *Digantar* in Rajasthan, or the Jagriti School in Delhi. These are just some of the numerous experiments in alternate education in India that have shown us what is conceivable and have pushed the system to change, even if it is slight. Effective schools research is a

type of school effectiveness research that shows us what is conceivable *despite* the system. Mainstream education research could learn from these schools as they tell us what is possible and how those possibilities may, if not completely, at least partially be incorporated into our system.

Even so, one question remains – *How can we produce better schools for all students?* We must be equally invested in not just describing great schools but also monitoring, evaluating, and improving existing ones so that we can create new effective ones. That is why school effects research and school improvement research are so essential. As already mentioned, there has been a considerable argument, and rightly so, over school effectiveness research only measuring output data such as test scores or outcomes like the pass percentage of grade 10 students. However, schools are a dynamic ground of knowledge-sharing, community-building, and conscience-provoking spaces that involve multiple stakeholders and their teaching and learning practices.

If we have to build effective schools for all, it only makes sense to monitor and measure the input provided by various stakeholders in building student lives and the impact of those efforts. Research in this area suggests that *strong instructional leadership from the principal, strong focus on structured, contextual, and well-defined curricular instruction,*

a learning environment that is safe and promotes student well-being, having teachers who stress high expectations from ALL their students, are essential variables to monitor on an ongoing basis if we are to evaluate their correlation and causation with short and long-term school effectiveness outcomes. This must also include measuring student achievement test scores to continually monitor the effectiveness of these practices. If we are to assess all these factors, we must ensure that all stakeholders in the school community are involved in the measuring and evaluative process. School improvement and school effects research are a combination of input and output measurement as well as an analysis of the various systems and processes in a school that are assessed and correlated with other effective school variables.

Input and output variables include the impact of human and physical resources on the student outcomes. In the initial years, the inputs mostly included economic variables such as per pupil expenditure, school facilities, or the number of books in the library. Over time, with increasing education research, other input variables that have begun to be assessed include but are not limited to the students' sense of control of their environment, the quality of teachers' education, teachers' high expectations for their students, perceptions of teachers, students, and principals, school climate, curriculum planning, and effects of the school board. This is done so that

Photo: Divya Choudhary
Courtesy: Greenwood School, Hyderabad

we can look at student development in a holistic manner and not just in terms of test scores. We can assess students in terms of their knowledge, skills, behaviour, attitudes and also look at long-term outcomes.

The impact can be measured as an effect on a student or an effect of a particular policy or practice. Outcomes such as scholastic attainment, classroom behaviour, absenteeism, attitudes toward learning, continuation in education, employment, and overall social functioning are essential to the development of an individual. Learning, and the love of learning; personal development and self-esteem; life skills, problem-solving, and learning how to learn; the development of independent thinkers and well-rounded, confident individuals, all rank as highly as variables to measure as opposed to a narrow outcome of academic achievement. There have been some studies conducted in this area that have focused on evaluating the impact of socio-emotional-factors such as attitude to learning or a child's academic self-concept. The outcomes of these studies are inconclusive. However, there is no doubt that there is a correlation between socio-emotional development of a child and their learning outcomes. That is why, very recently, even the 2015 edition of PISA integrated a new instrument that will evaluate students on five socio-emotional domains such as psychological, cognitive, social, physical, and material. The results of the past year have been positive. The results of the cognitive dimension (that measured enjoyment of science, self-efficacy, instrumental motivation as well as test anxiety) showed a positive correlation with student performance across countries.

Another important aspect of measuring school effectiveness is to assess the systems and processes in the school. Processes related to classroom instruction, assessment, overall curriculum, planning at a school and teacher level, teaching and non-teaching staff-related processes, data collection and monitoring processes, community engagement, and partner-related processes are just some of the important processes which when conducted in a smooth, well thought out and orderly manner, will make a school effective. For the school to be effective, these processes should be planned well and evaluated and improved continuously.

A school co-ordinator working in a private school in Bombay that I spoke to, seconded this. She mentioned how the school that she works in evaluates the consistency of these processes and

Photo: Amit Kohli

also seeks feedback on the effectiveness of these processes from the various stakeholders involved in that process. For e.g., it was decided to put in place a new process to promote student leadership and student voice. Students were encouraged to give suggestions through a suggestion box installed in each class and they led the way in reading suggestions and discussing the possible solutions. Before, during, and after this process was introduced, feedback was taken from the teachers and a few students to evaluate how the process could be made better. This was done during the regular staff meetings. The outcomes of such practices may include small changes in the processes conducted in the school or big changes which can lead to long-term outcomes.

Many schools monitor these inputs and outputs or process evaluations by creating a mixed stakeholder group including parents, teachers, administrative staff, students, and school leadership to conduct internal school audits. The mixed stakeholder groups are expected to go on school walks, execute classroom observations, conduct interviews with various stakeholders, and go through documentation including student work. The aim is to gather triangulated evidence to get an overall picture of school effectiveness.

Some schools also collaborate with other comparable schools to conduct similar school audits to provide a more objective view of their school's effectiveness. I spoke to one such mixed stakeholder group at a private school serving underserved communities in Pune. All of them unanimously believed in the process being essential to understanding the processes and systems at school and eventually improving these to make the school more effective.

One of the parent members said, "I am very amazed that the school is allowing transparency in this way. When we go for such a school walk, we know what is happening in every corner of the school." This transparency is what makes the process effective. For this transparent process to lead to an equitable system, there needs to be clear communication throughout the process. Shared leadership is the foundation of this process, and all stakeholders must be involved in essential decision-making. There must be a willingness of all stakeholders to learn and ensure that they understand that educating children and effective schooling are a collective responsibility. Each stakeholder can act as a 'critical friend' to the other and ensure that they come with an attitude of questioning with empathy rather than inspecting.

Some schools also participate in a self-evaluative and reflective process. The Australian Education Council (AEO) started a *Good School Strategy*. Part of it was the *Effective Schools Project* in 1991 conducted by the Australian Council for Educational Research (ACER). More than 2300 Australian schools responded to a questionnaire on various aspects of school effectiveness. Things that made schools effective included staff, ethos, curriculum, and resources. The report also stressed that accountability of schools should be a local issue rather than centralized at a national or state level. The report commented on moving the focus of school

effectiveness on maximizing academic achievement and instead shifting to a paradigm that supports students to build the love and pursuit of learning. The report stressed that personal development, problem-solving, life skills, learning how to learn, and self-esteem to develop independent thinkers and confident adults are what school effectiveness research should focus on.

The purpose of all school effectiveness work is to ensure equity of outcomes at all levels for all students. An equitable system serves all its stakeholders. The system ensures belief in the self-actualization of all students if they are given the right support at the right time. For that, the system ensures high expectations through high-performance standards. It has monitoring and evaluation processes in place to ensure the disaggregation of data to determine systemic and individual needs. This in turn ensures differentiation in instruction. An equitable system ensures access and inclusion and capitalizes on the diversity of stakeholders. It ensures a safe and positive environment for learning. It safeguards the involvement of the community and makes sure it connects learning to real-life experiences. Such a system is possible only if accountability can be built into the system at various levels and systems and processes are consistent. It is important to note that measuring school effectiveness just like measuring student achievement must be based on a system of collaboration rather than competition. Improving school effectiveness is a societal goal that all of us must pay attention to and in practice, must be willing to move away from the static outcome based process to a more holistic, journey based process.

Note: I spoke to two schools – the school in Pune is a K-10 state board affiliated school serving underserved communities. The school in Bombay is a K-10 IB board school.

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The author holds a Masters in psychology and has been an educator for the last nine years. She is currently working as Assistant School Leader at a school in Pune. When she is not teaching or writing, she loves reading, cooking, and long-distance running. She can be reached at <nupurhukmani12@gmail.com>.

Photo: Chintan Girish Modi
Courtesy: Trivandrum International School

Caring for the animals

Katie Bagli

Ramana Kailash has come up with a brilliant story in his book *Fire of Sumatra*. Poignant as well as inspiring, his story about how big-time industrialists and palm plantations mafia are ruthlessly destroying the Sumatran forests, completely disregarding the wildlife therein, expresses the maturity of a writer beyond his years (he is currently a class 12 student, and this book was written when he was in class 9). Through the lives of the protagonists – tigers – in the story, Ramana has brought out very clearly all the odds against which wildlife has to survive, in their daily activities of hunting, guarding territories, as well as safeguarding and bringing up their young. Added to this are anthropogenic activities like deliberate fires in their homes and nasty traps which Ali, the tiger, calls 'death's hand'. Indeed, the plight of the tigers is brought out in great detail and is sure to tug at the heartstrings.

Ramana has clearly done extensive research to showcase on the one hand, how tigers are walking the tightrope of survival in the face of human activities born of greed, and on the other, how animal lovers working in the field of conservation and protection are going all out, expending all their energy and time to ensure that these majestic creations of nature continue to see the light of day. An interesting and very unusual feature is about how Zalim, the male tiger, looks after his cubs in the absence of their mother, which is not so common among tigers.

Although there are no illustrations in the book, Ramana has painted images so well with the right usage of words that the reader is sure to feel he or she is in that very jungle scene. His story also brings about a strong emotional connect and concern for all wildlife, especially the tiger.

While the language is mostly good, at places more editing would have helped. Since the frequent fires are in the Sumatran forests, the only habitat of the orangutans, a bit more about them could have been added to the story.

All in all, the story is gripping – not a single dull moment in it and reads easily. Good enough for anyone nine years upwards. Teachers can use the story to imbibe values like empathy and compassion for all animals. Ramana's story will certainly
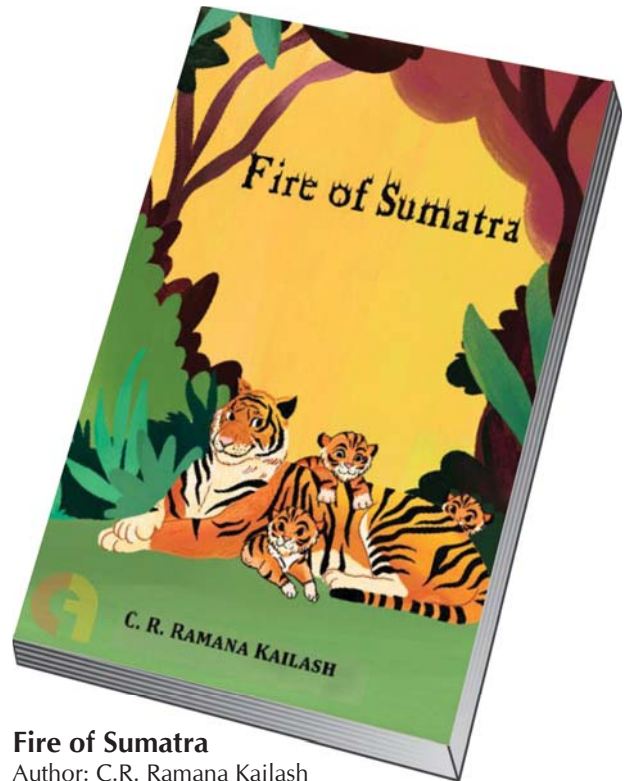
Fire of Sumatra
Author: C.R. Ramana Kailash
Publisher: Kamarkat Publishing
Pages: 191
Price: Rs 250
Available on: www.amazon.in, www.flipkart.com, and www.zerodegreepublishing.com.

succeed in sensitizing our young and bringing about awareness. From the point of view of creative writing, there are several settings very aptly described with good use of figurative language. I will definitely recommend the book to school libraries.

Let this be the first rung up the ladder to many such books by Ramana that open the eyes of those who do not realize what is happening to the natural wealth of our planet.

The reviewer has authored 40 children's books so far, almost all of which are on themes of nature and wildlife. She brings out her passion and deep concern for the environment in her stories. Katie is also Education Director of Jane Goodall Institute, India. She can be reached at <katiebagli@gmail.com>. You can also visit her website www.katiebagli.com to know more about her work.

Case studies in the science classroom

Chandrika Muralidhar

A case study is a look at an actual event, a study of a real-life situation. In developing case studies, an event is chosen that requires the use of scientific concepts in a human context (Wheatly, 1986), students are placed into the circumstances surrounding the event with the help of documents written at the time the event occurred. This would usually involve a two or three-page hand-out, plus other document references which would support the students when they outline arguments for one of the viewpoints presented in the case. The case study approach urges them to review the facts and frame a response based on the interaction of science and society. While analyzing the problem, students experience the flavour of opposing arguments and learn to prepare rebuttals. Each student needs to develop a personal rationale to use in deciding on the outcome, thereby acknowledging individual biases and values.

An initial attempt to use case studies in a science classroom was by James B. Conant of Harvard. He organized an entire course around this mode of teaching (Conant 1949) and presented cases using the lecture method. However, this approach did not gain momentum. In another approach, newspaper extracts were used. The students were expected to provide concise responses to questions like – What is the problem being investigated? What are the details of the method used? What are the pertinent results? What specific conclusion can you draw from the study?

Ways of using case studies
- Take one or two graphs and tables from any scientific article and ask the students to interpret the graphs or plot the data, postulate the methods, and speculate on the conclusions.
- Another technique is to simply collect a series of articles focused on a single topic. These articles are put on library reserve or copied with permission from the journal involved and then given to the students. If accompanied by a short series of questions to guide their reading, an outstanding case can be developed.
- Case histories are largely finished stories and are generally less exciting than decision or appraisal cases. They can serve as illustrative models of science in action and they provide plenty of opportunities for Monday morning quarterbacking. Science is replete with cases of this type: for example, The Copernican
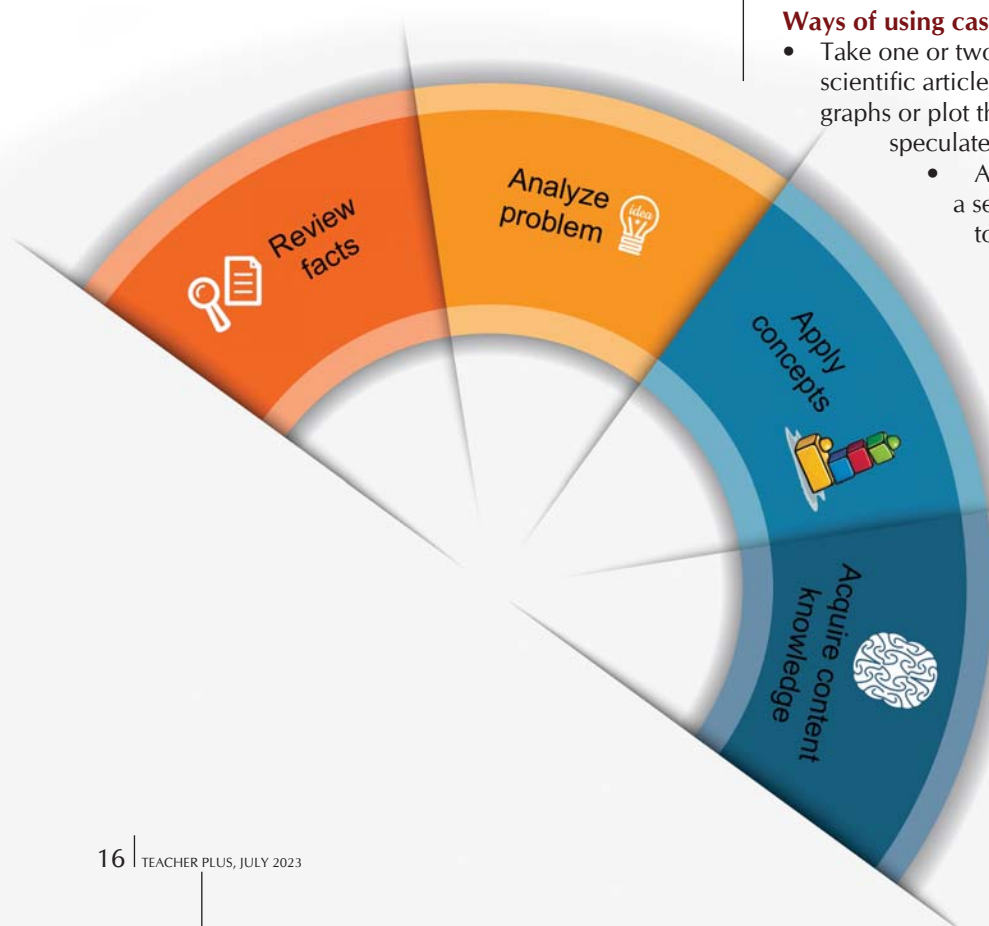
revolution, cold fusion, or the Tuskegee syphilis study where several hundred black syphilis patients were studied for decades without modern medical treatment being provided. (Herreid 1994)

Case studies and the teacher

Case studies develop reasoning and evaluation skills. Cases make the process of scientific learning more genuine and rigorous, bringing alive classroom learning and helping students apply concepts to understand contemporary societal challenges. Together with lectures and labs, case studies assist students in acquiring content knowledge, process skills, and an understanding of the context and application of science to their daily lives.

Novice teachers often reason that going with what's worked in the past (i.e., how they were taught) probably will work in the future. Without much training devoted to the art of teaching and learning, young teachers suspect that there's no need to be distracted by other styles if this one seems to work fine. Case studies offer a powerful diversification tool that allows a teacher to teach across content knowledge, process skills, context, and application skills. In some instances, case studies can provide students with the kinds of skills they typically master in labs, thus offering instructors the possibility of turning non-lab classes into more robust scientific experiences. And they make the learning experience real, empowering students to want to become scientists and giving them the practical experience to do so.

For instance, using a single journal article as the focus of a case study, students can practice the scientific method; from issue identification to question formulation, hypothesis testing, experimental design, and data analysis and interpretation. They see how scientists grapple with tough issues and interpret "messy" data that often contain significant statistical uncertainty. And they can make value judgments based on the evidence, just like we do in the real world. (Camill, 2006)

Story first – start with a story. All teachers tell stories (usually a lot of them), often funny vignettes from their past or an anecdote about a famous personality. The trick is to embellish and expand that story into a full-fledged case. Likely, you will need to research to unearth details that you may have missed or forgotten. Then you will have to choose the principles or concepts that you wish to introduce into the case and how to introduce the science into the narrative. Should we weave it into the

A diagram showing two alternatives to writing cases. On the left side, a teacher can start with a story that she knows and then identify the principles that she could incorporate into the case study. On the right, a teacher can start with the principles that need to be taught and then create a storyline for the case. In either approach, the instructor must choose a teaching format, the resources that the students need, the product(s) that they will produce, and the assessment methods. Order of the steps in the later part of the diagram is not regimented.

How to write a case study
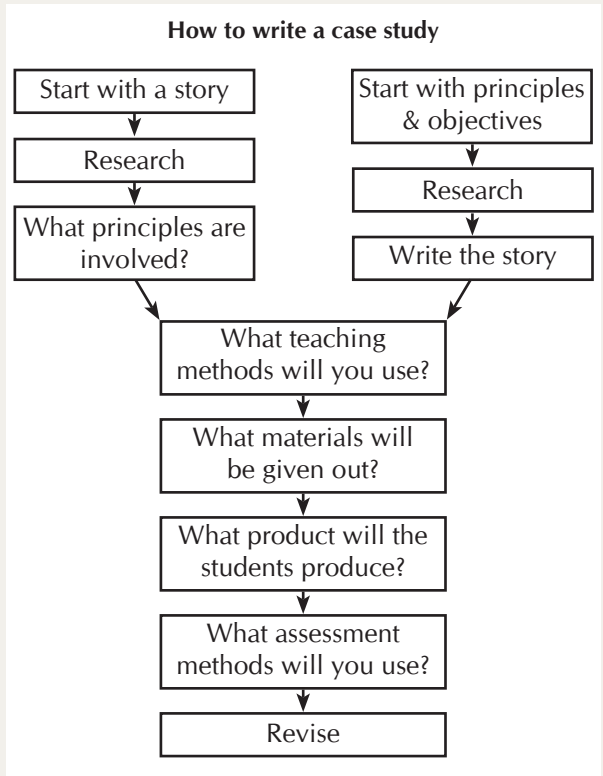
(Source: Herried, 2019)

storyline or try another strategy such as using a set of guided questions to have the students look up the material or introduce it as distinct essays? It would be pertinent at this point to keep in mind the target audience, teaching method, resources, product, and assessment. Another important aspect to consider would be whether to deliver all the case details at once or in separate capsules. Once this is complete it would help to pilot it with the students followed by incorporating feedback and editing. This is one way of writing a case study and might be simpler because you already know a real story whose details you can look up.

Concepts first – backward design. More often than not you will have to create the story yourself. Ready-made stories seldom exist for topics you cover in your classes. In such a situation identify a subject in your curriculum where you want a case study; say

you want a case on pH and its impact on enzyme function. Then, first and foremost, identify the objectives that your case must achieve to be successful. This method of approach is called the *backward design*, (McTighe & Thomas, 2003 and McTighe & Wiggins, 2004). In a nutshell, three steps are involved in the method:

a) identify the desired results (big ideas and skills) you want the students to acquire,

b) determine what evidence you would accept in determining if you have met your goals; and

c) design activities that will allow you to achieve your goals.

Notice that the backward design model posits that you design your assessment methods even before you design the case itself. That makes sense, but it is often hard to do. So, if we were to incorporate that model into the diagram on the previous page, we would have to shift the assessment step upwards to just after the objectives are determined.

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The author is a faculty member with the Azim Premji University and primarily works with the Communications and Publications team of the university. She teaches and contributes to professional development programmes. She has been working in the space of science education, teacher capacity enhancement, curricular material development, textbook writing and as an editorial member of the university publications. She can be reached at < chandrika@azimpremjifoundation.org >.

Why do we

A creative and critical mind seems to be a problem in today's world, and society often tends to look at it as some kind of a deviation from the normal, rule-abiding, passive mind idealized by mainstream schooling. An occasional painting, a clay vase on the potter's wheel, a piece of craft made from waste materials, or hobby class in music or theatre is seen as a recreational or co-curricular engagement, but on a day-to-day basis as far as the main life course of the child is concerned, parents and teachers often prefer that they take well-trodden paths that are low risk, high return, and stable in terms of the parameters that society values the most, such as financial stability, social security, or power. How many of us really want our children to grow up as independent and sensitive thinkers with a questioning-exploring mind of their own?

It has been widely recognized that individual thinking and sensitivity have nothing to do with modern education. That is the reason why students are often denied the right to question in the classroom; parents keep scolding their children when they no longer unconditionally follow instructions or question things around them. When children grow into adults, the community denies them the freedom to raise their voices against social injustice, fight for their rigs or even express their emotions without the fear of being judged. From the home to the school and the community, children are discouraged to think, question, feel or be sensitive to the world around them. They are expected to walk the path that somebody else has decided, borrow their dreams from the market logic, and fit into the mould society has cast without doubts, questions, or a mind of their own. People who dare to look at the world differently are often labelled idealists, puritans, or impractical.

While working with different groups of students and talking about questioning, sensitivity, and development of critical consciousness, I became aware of the many ways in which our community tries to silence creativity and uniqueness. Our teachers often reprimand students who don't understand concepts in one go or ask questions that are apparently not in the syllabus. Either the child is labelled as dumb, incapable, or mentally insufficient or is called over-smart, rebellious, or spoilt. A child who is questioning is likely to be participating in the classroom, taking interest in what is being taught or wanting to expand his/her knowledge, but instead of appreciating the child and opening up avenues for them to explore, many teachers and parents see this as a problem or symbolic of the child crossing their limits, being disrespectful of adult authority or acting beyond their age! You can very well see the repercussions of this in our classrooms where students are expected to memorize answers from the book rather than form their own understanding

chop off children's wings?

Vikash Sharma

Photo courtesy: Vikash Sharma

of things, follow classroom instructions without questioning, participate in activities ranging from classroom teaching, craft-library periods, examinations and assessments, conducting experiments in the science lab all with the consistency of a lifeless robot that is programmed to follow rather than think and feel the world around itself.

The system wants every course of action and method to be uniform under the control of a highly regimented process that seems to be manufacturing well-programmed robots instead of creative-critical and sensitive human beings. Market oriented learning, parental and social pressures snatch away children's uniqueness and creativity and bring up dull individuals who have not had a chance to develop their own consciousness or sense of identity beyond the social programming.

During my interactions with children they often reveal how a mind becomes narrow and insensitive. In a lower-middle class family, a girl is expected to handle domestic chores but a boy is expected to study and the parents ensure that he is provided with a suitable environment. If the girl questions her mother, asking her why she is compelled to cook and clean while her brother is encouraged to study, paradoxically the parents don't reflect or rethink their parenting, instead they reprimand the girl and say, "Bahut mu chlata hai" (You talk too much). A girl looking at the world with her own eyes, questioning the patriarchal status quo or asking for the chance to be treated equally with her brother is seen as a problem in the family and often girls who dare to question are either married off early or caged within the walls of the home. With time, most children stop questioning and adjust with the system knowing that this is how things are and shall forever be for them. Is the child denied critical thinking because of the danger that he/she will now understand the paradox of the society, question its power structure and age-old customs? Are children who ask questions seen as problematic because they reject tradition, hierarchies of knowledge and insist on democracy and justice?

The author is founder of Shiksha Swaraj Centre, Patna. He can be reached at <vikashsharma946@gmail.com>.

A wealth of treasure to dip into

Urvashi Nangia

Read-alouds have so much power. Most people understand that reading contributes to an increase in the development of essential language skills and fosters imagination and creativity in children. However, developing a love for reading goes way beyond this. Books act as both windows and mirrors. They help us understand ourselves and the world better. Furthermore, reading diverse books, hearing different voices helps us develop empathy, critical thinking skills, and makes us aware of the many worlds that co-exist with ours. Prof. Kumar (1992) says that, "Storytelling deserves to be seen as a civilisational practice, which permits us to protect the diversity of cultural experiences and stances from the homogenising effects of modern education and media." Apart from the explicit and implicit learning, reading is quite a pleasurable experience in itself.

Read-alouds can be started with children as young as six months old. The world of picture books can be magical. It's amazing how pictures have the potential to capture one's imagination and are such an essential ingredient in attracting little ones towards books. Understanding the stories and the words come much later. Often, picture books for children have an interesting use of language and are written in a fun, rhyming format. Storytelling needs to be seen as an experience. Rosenblatt (1980) says that, "Efferent reading will select out the desired referents and ignore or subordinate affect. Aesthetic reading, in contrast, will fuse the cognitive and affective elements of consciousness – sensations, images, feelings, ideas – into a personally lived through poem or story." If we think of it as an experience, it is quite similar to how we listen to music or see a film. Good storytellers select the best of books and then work to create a bond between the book and the child. For early readers, the beauty of reading storybooks also lies in the fact that it is a non-stressful, enjoyable activity. The kids are not tested on the books. The words can be read again and again and the pictures can be seen whenever the child wants to go back to them. There is no one way to read or think about a storybook. Children have the freedom to read from whatever page they please and are under no pressure to complete the whole story. When introducing

Photo courtesy: Urvashi Nangia

storybooks in schools or homes, we have to ensure that there is access to good quality books as well as the freedom to explore them without pressure.

Curating good books for children at an individual level is not an easy task. There are so many new titles that are published every year. You need to know the good publishers, visit their individual websites, go through each of the titles, look out for known authors and illustrators, try to get a copy to browse through or check if it is available on YouTube and then procure them. There are several limitations at every step and it is a very time-consuming process. Another way is selecting good quality books by recommendation, which is much faster and more efficient. Most of us rely on recommendations by fellow readers who include educators, parents, librarians, and independent bookstores.

When Parag announced its first Parag Honour List (PHL) in 2020, we were thrilled! Parag is an initiative of the Tata Trusts, set up about two decades ago. It supports the development of and access to good quality storybooks for children in Indian languages. The Parag Honour List is a first of its kind effort in India, of an independently curated list of outstanding books published in Hindi and English across genres and age-group spanning 0-16 years. The books comprise original writings in the category of picture books, young readers, and young adults, in fiction, non-fiction, and poetry. Over the last four years, PHL has honoured more than 180+ books, out of which almost 65 are in Hindi! The 4th edition of the PHL was released in February this year. The list is created annually with careful screening and multiple reviews by experts in the children's literature sector. Previous jury members have been writers, poets, and eminent educationists including Dr. Arvind Gupta, Usha Mukunda, Sandhya Rao, Mini Srinivasan, Samina Mishra, Jeeva Raghunath, Majiri Nimbkar, Anita Balasubramanian, Thejaswi Shivanand, Arun Kamal, Gurbachan Singh, Suneeta Mishra, Arundhati Devastale, Prachi Kalra, Manoj Kumar, Shaili Sathyu, and Teji Grover.

Jugnoo Publications – an imprint of Ektara Trust – dominated the Hindi PHL 2023 with 18 of their books getting selected out of the total 21 this year. In the past, we have thoroughly enjoyed their poetry books. Our favourites have been *Bees Kachouri Poori Tees* written by Sriprasad and illustrated by Proiti Roy; Bhai Tu Aise Kavita Kyu Karta Hai written by Sushil Shukla and illustrated by Vanadana Bisht and *Keral Ke Kele* written by Prayag Shukla and illustrated by Debabrata Ghosh. The kids have giggled with delight during the read-alouds. The books have beautiful full-page illustrations, humour, and a sweet play of words which sets your imagination rolling in many ways. The poetry offers freedom and inspires readers to make poetry. Our kids kept trying to make short *kavitas* after reading these books!

We also absolutely loved the wordless picture books by Pratham Publications. Ikru's First Day at School by Sunaina Coelho, *This is Where We Live* by Manjiri Chakravati and *Snip* by Canato Jimo. What we noticed was that with wordless picture books, the storytelling differs with the storyteller as there is no script to follow. The storytellers and the audience notice different things during different readings which is so amazing. Our kids read and re-read *Snip*. The book has so much mischief and play in it. Following the readings, our elder son experimented with cutting his hair on his own and the younger one kept trying out different head gears!

The other picture books we enjoyed include *Lila's Loose Tooth* written by Mamta Nainy and illustrated by Habib Ali, *Nani's Walk to the Park* by Deepa Balsavar; *The Runaway Peacock* written by Niyatee Sharma and illustrated by Shailja Jain in fiction and *Zakir and his Tabla – Dha Dhin Na* by Sandhya Rao and illustrated by Priya Kurian in non-fiction. After reading *Lila's Loose Tooth*, our son kept asking when his teeth will fall off! He loved the ending. *Nani's Walk to the Park* makes the ordinary, extraordinary. Love how the lanes are named – the lane of happiness, the lane of dreams and so on. Nani's interaction with the neighbourhood exudes so much warmth. Reminds me of our grandfather, who took out time to interact with his neighbourhood and build a kinship with the wider community. There are so many wonderful things in the book both for children as well as adults. Additionally, it is in a big book format and has lovely pictures which makes it perfect for reading out loud to a group of students as well. *The Runaway Peacock* is an adventure of a peacock who runs away from a saree. Spotting the peacock on every page was so much fun for the children! Another book by Tulika Publishers, *Zakir and his Tabla – Dha Dhin Na* was just brilliant and so inspiring. The author Sandhya Rao also did an online workshop for kids where she showed original pictures and shared incidents that went beyond the book. The father-son relationship and the idea of riyaaz left a lasting impression on us.

What we read can really impact both the children and us. What keeps amazing me is when the children refer to the book in some way or do something

related to the book, weeks or even months after reading it. Surprisingly, children as small as one can recall and relate things from storybooks. Amongst the first five words our first child spoke was *haathi*. He had never seen an elephant in real life but his first and favourite book for a very long time was *Haathi Bhai* a book based on a Gujarati rhyme and illustrated by Paridhi Didwania. The word came from the book! It just reinforces my belief that we must keep striving to offer our children the best of children's literature. PHL is a big help for the same. It features some of the best Indian authors and illustrators and spans across various themes. Susan Engel (1995) stresses that, "Listening to and telling stories are cultural activities. As children learn the story form, they also learn about their culture. In turn, through stories, aspects of their culture shape the way they think and remember about experiences." An Indian list is what we have needed for a very long time. Importantly, some of these books have been translated into other Indian languages. We hope that these brilliant books can be translated in many more languages and can be procured easily and reach a much wider audience. We haven't read all the books featured on the lists but we keep going back to PHL and picking up books depending on the current interests and age group of the children. This time there are 12 picture books for early readers. We just can't wait to read some of them!!

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The author is the founder of Kashti, an educational initiative which aims to inspire compassion, critical awareness, and conscious action for a better world. Currently, she holds workshops with primary and pre-primary teachers as well as parents on 'Raising Readers', 'Re-Centering Play' and 'Foundational Mathematics'. She can be reached at <kashti.india@gmail.com> or you can see her work at https://www.instagram.com/kashtiofficial/

The National and School

N EP 2020 has presented a new horizon to the Indian education system. A totally revamped curricular and pedagogical structure of $5 + 3 + 3 + 4$ proposed by NEP 2020 has put policymakers and curriculum designers across India to work. The best minds of India have rolled out two major frameworks to realize the vision of NEP 2020.

The National Curriculum Framework for Foundational Stage (NCF-FS) released in October 2022 has proposed an integrated approach to Early Childhood Care and Education for children between the ages of 3 and 8. It has also proposed pathways for achieving foundational literacy and numeracy by adopting age-appropriate strategies and defining play as the core curricular approach for curriculum transaction.

The recent pre-draft release of the National Curriculum Framework for School Education (NCF-SE) on April 6, 2023 has put forth yet another comprehensive document in the public domain for discussion and comments. It is enormous, elaborate, and has commented on each and every perspective of school education. It has put forth many restructuring suggestions with recommendations to embrace contemporary approaches to pedagogy and assessment.

The draft entails exhaustive recommendations for all the three stages of school education – preparatory, middle, and secondary – along with the intricacies involved. This article presents a brief overview of the pedagogical and assessment process proposed in NCF-SE and the subsequent challenges that may arise during its implementation.

Play pedagogy and self-paced evaluation for preparatory stage
The preparatory stage curriculum includes grades 3, 4, and 5. The proposed curricular areas of language, mathematics, arts, physical education, and the world around us are almost similar to what already exists. The proposed pedagogies for this stage are activity based and discovery-based learning. These pedagogies will be supported with self-paced individual work and homework. The prevailing competency-based syllabus prescribes activity-based learning and teachers are equipped to handle this change, but they may need to acquire competencies to deal with the self-paced instructions. The proposed assessment process for the preparatory stage is observation and

Curriculum Framework Education: Some insights

Divya Sharma

formal written examination in the form of summative and formative assessments. The teachers will be evaluating students as per their competencies and this does not show a major shift from the existing structure of evaluation. A comprehensive summative assessment at the end of the preparatory stage is proposed to evaluate the readiness of the preparatory stage students to enter the middle stage. This is a major shift from what exists now since in the present system evaluation pattern is institutional and it only tests achievement for the given class and not the readiness level for the next stage. This summative assessment may require a ground level planning to ensure conduct of valid and reliable examination. This appears to be a strong recommendation looking at the declining achievement levels of the students and their poor performance in international examinations.

Exploratory and inquiry-based pedagogy with comprehensive assessment for middle stage

The middle stage comprises grades 6, 7, and 8. The sciences and social sciences will now be added in the curriculum along with other subjects. The proposed pedagogy for this stage includes direct instruction with ample opportunities for exploration and inquiry. NCF-SE has proposed a formal and unambiguous assessment process in the form of written examination for the middle stage. The regular summative assessments are to be taken at appropriate intervals like at the end of each unit, each term, and year. The format for written examination can be in the form of multiple-choice questions, short answer, and long answer. A comprehensive summative assessment at the end of the middle stage is proposed that can measure not only the competencies acquired but also indicate interest in specific curricular areas that students may have demonstrated. There is no major deviation in the curriculum structure, transaction, and evaluation during the middle years. A major shift is observed in the summative assessments, which aim to measure interest and competencies. Teachers will be required

to gear themselves to develop and train in evidence-based pedagogies and ensure accumulation of ample evidences during the course of teaching.

Student based self-assessment monitoring for secondary stage

The secondary stage includes grades 9, 10, 11, and 12. NCF-SE proposes three broad curricular areas of science, social science, and humanities for grades 9 and 10 and eight curricular areas (humanities, mathematics and computing, vocational education, physical education, arts education, social science, science, and interdisciplinary areas). Students will have to select two essential courses (a total of 16 courses) from each curricular area for a grade 10 certification. These courses are expected to give the

National Curriculum Framework for School Education 2023
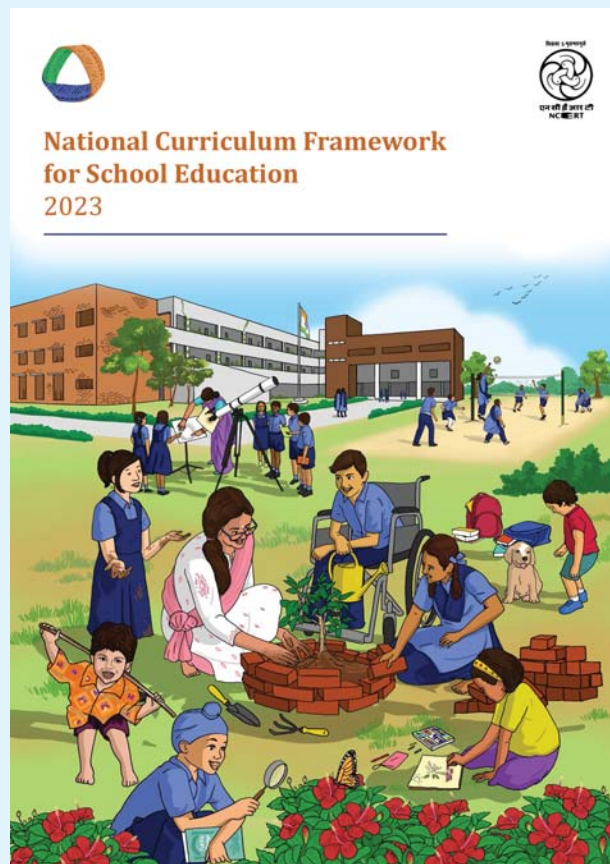
necessary understanding and capacities to the students. The same set of eight curricular areas will continue to be offered for grades 11 and 12 but here the choice-based courses will be designed based on the disciplines within the curricular areas to ensure deeper engagement. This phase will be divided into semesters and students will be required to complete 16 choice-based courses in each semester. The students will also be required to choose disciplines from at least three curricular areas and a total of 16 courses in each semester.

No.	Curricular Area	Disciplines
1	Humanities	Language, Literature, Philosophy
2	Social Science	History, Geography, Political Science, Psychology, Economics, Sociology
3	Science	Physics, Chemistry, Biology
4	Mathematics & Computing	Mathematics, Computer Science, Business Mathematics
5	Arts	Music, Dance, Theatre, Sculpture, Painting, Film appreciation, Scriptwriting, Set design
6	Vocational education	Aligned to National Skill Qualification Framework
7	Sports	Course on specific sports/games/yoga
8	Inter-disciplinary Areas	Commerce, Sustainability and Climate Change (Environmental Education), Health (Public community health), Media and Journalism, Family and Community Science, Knowledge of India, Indian Knowledge System, Legal Studies etc.

A comprehensive classroom assessment to record students' learning against competencies is recommended. A student based self-assessment monitoring system supported with feedback has been proposed to measure learning trajectory. The role of the feedback system will be to adjust, adopt, and decide strategies for learning. This recommendation will require detailed guidelines and specifications for competencies and outcomes. Summative assessment will include formative examination including case-based questions, simulations, and essay-type questions for assessment of acquired competencies. Two board examinations a year and other tests have been retained. The purpose of the board examination will be to assess the achievement of competencies and to allow the students to choose from the options available for higher education and livelihood opportunities.

A shift from memory-based assessment to competency-based assessment

NEP 2020 proposed a shift from memory-based assessments to competency-based assessments that will evaluate higher order skills such as analysis, critical thinking, and conceptual clarity. NCF-SE proposes a new examination system which will focus not only on the level of acquisition of competency but also conduct a comprehensive evaluation for vertical movement from one grade to another. A disconnect between the curriculum development body and examination body is recommended. This recommendation might require extensive preparations and adequate arrangements for developing and designing fair, reliable, and valid testing instruments for students across the nation.

The board examination is proposed twice a year and students will be free to write examinations in courses they are ready in. It is recommended to develop a comprehensive test bank through which tests can be developed using suitable software.

A lot of detailed work and planning at the grassroots level will be necessary to realize the recommendations of NEP 2020. Some of the recommendations will require further brainstorming for fine-tuning and alignment with the available resources in schools. The competencies of teachers in schools will be required to be enhanced not only in training rooms but also in the classrooms.

Finally, the question that arises is whether the education fraternity is ready to take what is being offered. The implementation of these recommendations will require elaborate preparations and extensive provisions right from the national level to the institutional level. The implementing bodies and agencies involved in making specific arrangements, preparations, and provisions have to work with detailed planning and minute precision to open the road to implementation of national curriculum framework in its true essence.

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The author works at Indian Institute of Teacher Education, IITE, Gandhinagar, Gujarat. She can be reached at <divyas@iite.ac.in>.

WHAT COMES OUT OF THE WOOD(WORK)?

Sharmila Govande

My earliest memory of woodwork is that of my visits to our sutar* kaka who lived close to my father's ancestral home. His workshop smelt of fresh sawdust filling up the room as he worked on his lathe machine to make wooden kitchen toys; we fondly called them 'bhatukli' in our local language. I was fascinated by his workshop – a small room in his house. His twinkling eyes and flashy smile peeping out from his sawdust covered face doubled my fascination for his work and I often spent hours watching him carve out toys and add colour to them.

Wood, along with stone, clay, and animal parts, is one of the first materials to be used by early humans. Barks of trees and leaves were used to create shelters to protect from rain, cold, and heat. The invention of stone tools marked significant progress in the ways in which wood was shaped.

Homes, offices, shops, factories – woodwork is an integral part of every structure we create. We have various work tools, furniture, toys, kitchenware, decorative artwork, and utility items made from wood. Right from a crib to a coffin – wood is a constant companion for all.

Sutar is the Marathi word for carpenter.

This project on carpentry and woodwork traces the evolution of this craft in India.

What is carpentry?

Carpentry is the craft and trade of working with wood to build structures and create objects. It is one of the oldest construction trades. In the past, the carpenter along with the mason was the principal building worker.[1] However, with the increased use of metal and cement in the construction industry and with interior designing gaining popularity, the role of carpentry has shifted to producing doors, windows, furniture, and other interior accessories. The changing trends from use of natural wood to engineered wood, and the advent of computerized machines, tools, and equipment have changed the face of carpentry.

The art form of working with wood is known as woodwork. It includes crafting various products from wood – including toys, utility tools and products, kitchenware, and decorative items.

Wood carving is the art of fashioning or ornamenting objects of wood by cutting with a sharp handheld implement[2]. Wood carving is thereby a form of woodwork where one carves out various artwork and objects from a piece of wood.

Photo: Paiviti, courtesy: www.freeimages.com

Evolution of carpentry

The word 'carpenter' comes from the Latin word 'Carpentum' (meaning a chariot or carriage). Later it was called 'carpentier' in French and was used to describe someone who made things from wood.

The invention of stone tools in the hunter-gatherer period changed the way in which homes were built. Wood became an important building material. The shaping of wood improved with significant improvement in the shaping tools from the Stone Age to Bronze Age to Iron Age. Some of the oldest archaeological evidence of carpentry can be seen in the use of wood in water well casings excavated in Eastern Germany dating 7000 years in the early Neolithic Period.[3]

In the Indian context, the origin of carpentry can be traced back to the Vishwakarma community. Communities engaged in working with wood were known as *sutradhar* or *sutar*. According to legend, *sutradhars* are descendants of Maya the son of Vishwakarma, who Hindus believe is the divine engineer of the world. They engaged in making woodwork for chariots. Sutradhars were also known to be constructors of monuments, temples, palaces, and other structures.

Activity 1

Look around your home and make a list of products made from wood. Draw those products and observe the kind of wood used and think of what tools and machines were used – is the product handmade, or machine made, or a combination?

Where does the wood come from?

Teak, Sal, Shisham, Rosewood, Jackwood, Deodar, Satinwood, and Mahagony are the most commonly used woods in India. Junglewood from the rainforest trees is also used for railings, frames, windows, etc.

Teakwood – one of the most expensive woods is known for its strength and durability. Mostly used in making ships, building construction, and furniture, it is found in Madhya Pradesh, Maharashtra, Tamil Nadu, Karnataka, Kerala, Uttar Pradesh, Gujarat, Orissa, Rajasthan, Andhra Pradesh, and Manipur.

Salwood – is primarily found in Uttar Pradesh, Bihar, Madhya Pradesh, and Andhra Pradesh. Its tensile strength and durability make it a popular choice for making musical instruments and flooring.

Shisham (Indian Rosewood) – also called *talior sisu* in some regions, is found in Bengal, Assam, Uttar Pradesh, Maharashtra, and Odisha is used for making furniture and sports goods. It is strong, easily seasoned and looks good.

Jackwood – this easy to work with wood is found in Kerala, Karnataka, Tamil Nadu, and Maharashtra. It is used to make furniture, door panels, and musical instruments.

Deodar – found in Punjab and Uttar Pradesh was used to construct temples and for landscaping in the olden days. It is now used to make railway carriages, railway sleepers, packing boxes, and furniture.

Satinwood – is robust and durable and its glossy finish makes it very attractive. It is found in Central
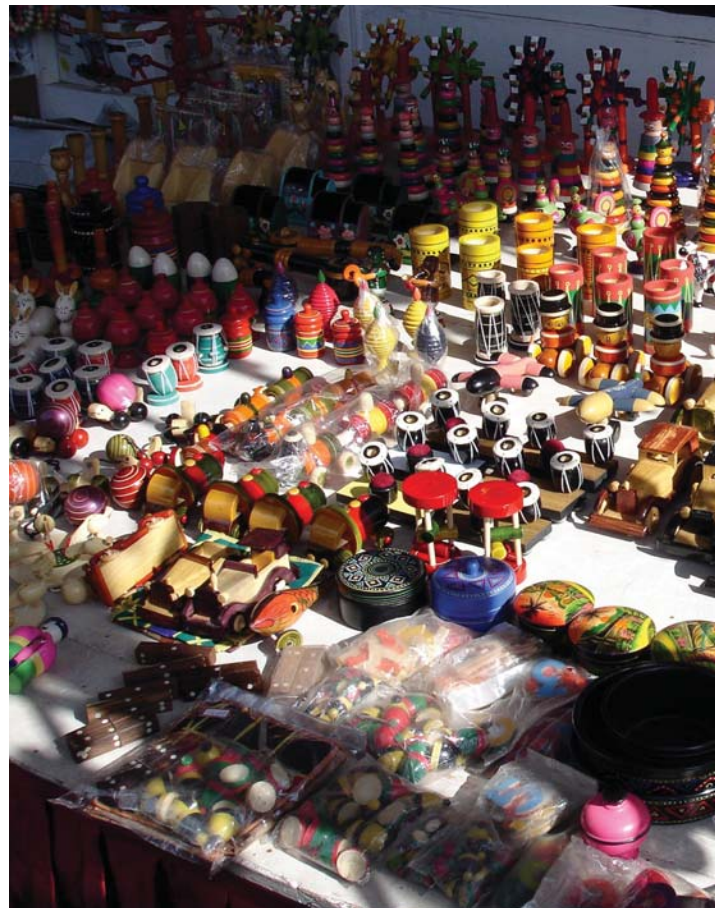
and Southern India. It is used to make decorative pieces and furniture.

Mahogany – stays durable underwater and takes up a deep colour after polishing. It is found in Bengal, Assam, and Kerala. It is used for construction of homes near water bodies. It can be sculpted easily and hence is used in wooden sculptures and decorative articles as well.

Activity 2
Which wood is found in abundance in the city you live in? Where does it come from? What is it used for? Make a map of India and show where different types of wood are located.

Woodcraft in India
Different types of woodcraft are famous in India. Himachal, Kashmir, Punjab, and Uttar Pradesh in the North to Gujarat, Maharashtra in the west to Karnataka, Tamil Nadu, Kerala, and Andhra in the south. The crafting techniques and artwork is different and unique to every state.

Sahranpur – The wooden city of India
About 200 kilometers outside Delhi, near the Shivalik Hills in Uttar Pradesh is Sahranpur, a city famous for its woodwork. Artists from Kashmir migrated generations ago in search of work. They set up their workshops in Saharanpur. These artisans

Photo: Pratheepps, courtesy: www.wikimedia.org

worked with wood effortlessly to produce beautiful artifacts, carved furniture and other products required for a household. The artists specialize in carving and jigsaw cutting bringing more complexity in the design. Today, the city houses more than 10,000 artisan units employing more than 50,000 artisans creating magic from wood.

Sawantwadi and Channapatna – Toy cities of India
For the last three centuries, artists in Sawantwadi have been engaged in making wooden toys and other home utility products from mangowood. Sawantwadi is located in the coastal Konkan region of Maharashtra. The craft was traditionally done by the Chitari or Chitrakar community which migrated from Karwada and settled in Sawantwadi. The finished product is a result of three steps - cutting and shaping, colouring, and assembly. The vibrant colours used to paint the products make them attractive and desirable. During the earlier days, the artisans used colours extracted from vegetables and fruits, however now they prefer oil based paints.[4]

Channapattana located in Ramanagara district, Karnataka is about 60 kms from Bengaluru. It is known for its handmade lacquer wooden toys all over the world and hence popularly known as the **"Toy-City"** of Karnataka. The origin of these toys dates back to the period of Tipu Sultan, the ruler of Mysore. It is said that he invited artists from Persia to train local craftsmen in the art of making wooden toys. The artisans mostly use ivorywood to make these toys.

Activity 3
Are any other wooden toys famous? Find out more about different wooden toys made in India and research how they are made and from what kind of wood.

Visit a handicraft store. Take a look at all the wooden toys. Interview the store manager about where the toys come from and how they are made.

Changing trends in carpentry
'Carpentry' as a profession has undergone a massive transformation in the last 200 years. During the British rule, the demand for skilled carpenters increased. Artisans were hired and trained for the massive infrastructural development undertaken by the British. Artisans who earlier passed on their craft through generations were now being trained through technical schools and colleges. Machinery was introduced for cutting. There was a shift from the traditional method of passing on the skills

Photo courtesy: www.freepik.com

from generation to generation to formal structured classroom learning, reading textbooks and learning to operate machines. A hierarchy was created among those who worked with machines and those who did so with hands – with a higher status accorded to those who could operate machines[5].

Technological advancement has brought further changes in carpentry. From handheld tools to machines fuelled by steam energy to electrical energy and now machines controlled by computers have further diversified this skill form. Computerized numerical control machines measure with precision, reducing all measurement related faults. Laser cutters and Vinyl cutters have brought in a better finish to cutting wood.

In the earlier days, every product was made from solid wood. Solid wood has a long lifespan and can last for centuries. Technological advances brought in the plywood followed by engineered wood and now MDF and HDF boards. Medium-density fiberboards (MDF) and High-density fiberboards (HDF) are engineered panels that are made through a dry process that completely breaks down the particles of wood and reconstitutes them into a new panel using heat, pressure, and a binder.

In the current scenario, carpentry using ply, engineered wood and MDF and HDF is becoming more popular than the product crafted by traditional artisans who use solid wood. The population of

traditional artisans is dwindling with the younger generation opting for new technology and the masses opting for mass produced goods made in mechanized factories.

Activity 4
Visit a carpentry workshop and observe all the tools and equipment and the different types of wood that are being used. Observe the way wood is cut, shaped and joined together to make different products. Write an essay on how learning carpentry skills could help you in your life.

Learning to be a carpenter
One can learn the traditional art of woodwork by becoming an apprentice with an artisan who has mastered the skill passed on through generations. This would mean staying with an artisan and learning the art from him through a learning by doing approach.

Alternatively, one can take admission in a technical institute teaching carpentry and learn through textbooks, classroom sessions, practical lessons and on-the-job training. Technical institutes offer certification which will help in securing a job in the industry. The ITIs (Indian Technical Institutes) are run either by the state or central government or function as private institutes.

Many hobby courses from basic to advanced level are being offered in many places today. Such courses may offer certification through the National Skill Development Corporation.

Many well-known NGOs working in the area of education and learning have started vocational training facilities for children. The New Education Policy2020 emphasizes the relevance of vocational education.

Lend A Hand India, an NGO focusing on making education more meaningful, relevant, and employment-oriented has played a key role in bringing vocational education to schools. Carpentry

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Children learning carpentry at Karigar School of Applied Learning.

along with other core skills such as welding and fabrication, plumbing, electrical works, gardening and agriculture, food processing, health and nutrition is being taught in schools through the Multi Skill Foundation Course. Lend A Hand India's Karigar School of Applied Learning based in Pune aims at taking skill education to masses from diverse backgrounds. Carpentry is one of the popular labs at Karigar. From a daylong workshop to longer immersive courses, all are taught here.

Activity 5

Research and find out about a carpentry class in your neighbourhood or city. Attend their workshops to get hands-on experience in cutting, shaping, and joining wood.

Conclusion

In the current academic scenario – 'learning by doing' and honing skills relevant for our everyday living are missing. Carpentry plays a huge role in developing an understanding of geometry and mathematics through use of measurement, size, and balance. Basic carpentry skills are useful skills to have. It would enable any individual to do basic repair of furniture and wooden products. It would also help individuals to assemble a DIY furniture with ease. Woodcarving and silent carpentry is also a meditative and stress relieving activity and can be taken up as a hobby. Knowledge of carpentry would enable one to make conscious choices of whether to pursue this as a career option. It is rightly said, *"Woodworking requires a completely different kind of thinking and problem-solving ability than writing. With writing, you take a set of facts and ideas, and you reason your way forward to a story that pulls them together. With woodworking, you start with an end product in mind, and reason your way backward to the raw wood."* ~ Joshua Foer

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The author is an unschooling mom, parenting guide, and a social development professional. She currently is managing Lend A Hand India's Karigar School of Applied Learning, Pune. She can be reached at <sharmila.govande@lendahandindia.org>.

Photo:jtvengarav Courtesy: www.freeimages.com

Photo: mzacha, courtesy: www.freeimages.com

Wooden Mask,
Arunachal Pradesh

Sadeli Art, Gujarat

Illustration and design: Tasneem Amiruddin

Kavad, Rajasthan

in Wood

Kondapalli Ambari,
Andhra Pradesh

Pinjirakari, Kashmir

Roads to learning, old and new

Chatura Rao

I was last a student two and half decades ago. This was at the stately and serene Sophia College for Women in South Mumbai where I spent three years until I graduated in 1994 with a degree in English Literature. In recent days, I feel like I've returned in spirit. A busy but kind office superintendent, Ms. Boskey Martis, has been advising me on how to apply for a couple of lost marksheets. She coaches, sums up instructions, and addresses me as "dear" in the exasperated way that people address anxious students. I'm in my 40s, pursuing a Masters designed for mid-career professionals, attending night classes and completing assignments in the hours I have free from my day job, and she might well know this, but to her I'm a student trying to get things issued impossibly quick; she knows just how to hold off these fears over a phone call each day.

The year 1995 onwards, I left and never returned to the sloping tree-shaded lanes connecting Peddar and Warden Road that the Sophia campus sits astride. Instead I set off down a freeway, riding challenges of a

writing career that has spanned reporting, journalism, children's and adult fiction, and technical writing. I've been barely aware of the protective spaces that college once provided… but found my way to another such setting in 2019, first to teach and through teaching, to learn.

Taking the lanes of a quiet, tree-lined locality, this time in suburban Bengaluru, I'd walk through the open doors of the Srishti Institute of Art, Design and Technology, every morning. I was here to facilitate learning for undergraduates and for graduate students in the areas of information arts and creative writing. In between teaching cycles, I'd chaff at what I saw as the fetters of academic life, sorely missing professional and personal interactions in the "real world" that had fueled my writing practice. I didn't miss these during the studios and workshops where my students and I would work together to understand the nuances of narratives and to search for and create our own.

Photo courtesy: Chatura Rao

In a studio called Rambling Ink, six creative writing students began with writing out pieces that another person, a close one, might have written about them. These were portraits in words that were to introduce themselves to the class and to me. S described herself from the point of view of a friend who was in love with her, yet helping her through a heartbreak. They were at a juice stall on a particularly difficult day and through his telling that is both affectionate and critical, we learn about her fragility, her strength, her stubbornness, and grief. We also understand his kindness, and S's own insight into his concern for her. M wrote from the point of view of how their mother may have written about them, the morning the two spent in almost wordless anger, even as their mother drove M all the way to college. When M wrote about themselves from their mother's point of view, they began to see the incident and their mother quite differently. These self-portraits were an honest and nuanced start to more intense fiction writing, sourced from their own lives. For me, besides the pleasure of helping them sift meaning and find a voice, the sight of them quietly typing away in the silver light of morning stirred a kind of joy I'd not known before. I fell in love with teaching.

Then last year, I returned to being a student, enrolling in a postgraduate arts programme at the Srishti-Manipal Institute itself, called Design in Education. Its studios and workshops have opened windows into areas of learning I hadn't known of. Not in the building of skill and technique, but more with insights into diverse and possibly slower processes of knowledge-making than I'd been aware of. Everyone who has the time and support to engage with ideas and material discovers new ways to perform in the world. But I see now that to do this consciously and critically is to learn; and to share intentionally in knowledge-making is to teach and to learn.

Six months ago, I decided to complicate a teaching experience by shifting my position. I'd facilitate, but also participate in a short story writing class as a learner. I'd perform some of the writing exercises that the students were set, including write a short story. I'd offer my work to the students to review. This felt like a scary proposition, since writing a short story, while a passion, was still a nascent skill. My plot-making was weak. In the weeks leading up, I had faced a block with ideas. I felt vulnerable before my students who were discerning 20-year-olds.

First we appreciated and critiqued thought-provoking short stories. Then each student wrote two drafts of a story concept based off prompts that I put up. The class of nine worked its way to writing individual story outlines. They came up with feedback for each other's outlines and for mine as well.
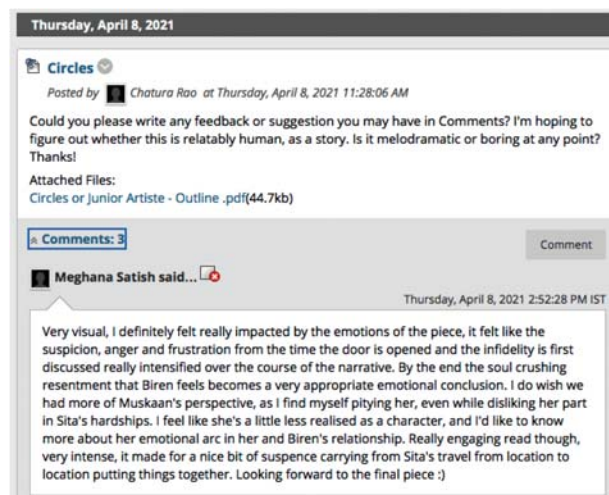
Two more students commented, appreciating some aspects and suggesting changes to others. I felt grateful for the feedback, understood better how learners take in suggestions for change, and most of all, resumed writing my story with a new enthusiasm.

Another, more subtle thing occurred: taking a listening stance surprised me out of a sense of complacency towards writing. It is the practise I profess to have skill at, and so ignore for being a territory conquered. But in reality, the word is both a source of light, my torch to explore the world, as well as my nemesis, the slippery thing I must wrestle with and often admit defeat to. My student-teachers, the three who took the time to read and respond to my draft, still walk with me in spirit on the old and new road to learning.

Next week I visit the office of the Sophia College for Women in Mumbai, a grey-haired ex-student, hoping that the two-and-half-decade-old marks cards may have been reprinted on gleaming white by Ms. Martis' staff. They may not be. These things are done slowly and systematically under the high roofs of universities. Having tired of scrambling around, I may be handed them gracefully, in their own time, somewhat like knowledge and wisdom are.

This article was first published in the Srishti-Manipal Institute of Art, Design and Technology student magazine called Gatepass Captcha Episode 1 (2021).

The author is a children's and adult fiction author, a journalist, and a teacher. Her writing centres around community practises, gender, and education. Her reportage has won Laadli Awards for gender sensitive reporting. Her recent picture book, *The Sweet Shop Wars*, is shortlisted for a 2023 Neev Book Award. She can be reached at <chaturarao@gmail.com>.

Wangari Maathai

Mother of Trees

Mamata Pandya

The first week of July is celebrated in India as VanMahotsav or forest festival. It is marked by the planting of thousands of trees through community events. It is a reminder of the critical role that vegetation plays in the conservation of water and soil, and thus of life itself. This week brings to mind the story of another greening movement that was the brainchild and life-long passion of an incredible woman named Wangari Maathai.

Wangari Muta Maathai was born in Nyeri, a rural area in the central highlands of Kenya in 1940. Her parents were farmers and she was the third of six children. Wangari's childhood was spent in the outdoors, playing in the fig trees and the stream around her home and helping her mother collect firewood for the household. She always saw herself as "a child of the soil", growing up with her mother's belief that trees were 'God' and should be respected accordingly, something she made the foundation of her life's work.

Wangari started her education at St. Cecilia Intermediary, a local mission school. She was always a star student; she won a scholarship to study biology at Mount St. Scholastica College in the United States and graduated in 1964. She went on to earn a Master of Science degree from the University of Pittsburgh. But as she wrote in her memoir *Unbowed, "The spirit of freedom and possibility that America nurtured in me made me want to foster the same in Kenya, and it was in this spirit that I returned home."*

After she returned to Kenya, Wangari continued her studies and obtained a doctorate in veterinary anatomy at the University of Nairobi, becoming the first African woman in East or Central Africa to hold such a degree. She then joined the university as an associate professor and went on to become chairwoman of its veterinary anatomy department in the 1970s.

Wangari was however more than an academic. She was very aware of the changes in her native country's landscape stemming from the legacy of the British rule – massive deforestation and overexploitation of resources. As a member of the National Council of Women of Kenya (NCWK), she was also becoming engaged with women's issues. She heard and saw rural women who were facing immense hardships due to water sources drying up and degradation of the soil; women who had to walk miles each day in search of firewood to cook their meals.

By then I understood the connection between the tree and water, so it did not surprise me that when the fig tree was cut down, the stream where I had played with the tadpoles had dried up. I profoundly appreciated the wisdom of my people, and how generations of women had passed on to their daughters the cultural tradition of leaving the fig trees in place. I was expected to pass it on to my children too.

Wangari remembered her mother's words about trees. She realized that the only way to prevent further deterioration of the land was to plant trees. *Now, it is one thing to understand the issues. It is quite another to do something about them. But I have always been interested in finding solutions…. It just came to me: 'Why not plant trees?'*

Wangari first approached foresters to urge for more intense and extensive tree planting. But they derided her by saying what could a veterinary scientist know about plants and plantation? Wangari was undeterred. She decided to go directly to the local women and started explaining to them the links between tree cover, soil, and water conservation, and availability of firewood to cook nutritious meals for the family. She urged that women themselves should take on the mission of planting trees.

Wangari set the example by starting a small tree nursery in her backyard and giving women saplings to plant. *"As I told the foresters, and the women,*

you don't need a diploma to plant a tree. After the women had planted seedlings on their farms, I suggested that they go to surrounding areas and convince others to plant trees. This was a breakthrough, because it was now communities empowering one another for their own needs and benefit."

This simple formula was to snowball into one of the largest grassroots tree planting movement – Kenya's Green Belt Movement. Wangari's approach was practical, holistic, and deeply ecological – the tree roots helped bind the soil, halting erosion and retaining ground water when it rained. This water replenished the streams needed for cultivation of food crops. The trees also provided food, fodder, and fuel which were the mainstay of the communities. Initially the government did not pay much attention to these nurseries, but as thousands of nurseries began to be created the government began to see the potential threat that such mobilization could pose to the status quo and vested interests, and it began to harass the Green Belters. By then the movement had attained its own momentum and mobilized thousands of women and men to plant tens of millions of trees across the country. The movement also did more than get women to plant trees; it empowered them to stand up for themselves even in the face of domineering husbands and village chiefs, as well as political and social pressures.

As the movement grew, Wangari Maathai was also becoming more convinced in her understanding that environmental changes alone were not sustainable unless they were linked to issues of governance, peace, and human rights. She used the movement to also address abuse of power like land-grabbing and human rights issues like illegal detention of political opponents. This led the Green Belt Movement to be labelled as 'subversive' during the 1980s.

Wangari felt that these issues could not be fought only through activism. She herself entered the political fray. She was elected as an MP in 2002 and also served as an assistant minister in the Ministry of Environment and Natural Resources. She used her position to fight for women's rights, democratic processes, and questioned corruption and abuse of power. This also led her to be seen as a threat to the powers that be; she was threatened, harassed, beaten and even jailed. In 2008 she was pushed out of the government.

In the meanwhile, Wangari Maathai and her Green Belt Movement were attracting international

Photo: Fredrick Onyango
Courtesy: www.wikimedia.org

attention. She travelled across the world campaigning for change; urging action to be taken on environmental justice, climate change, and championing the cause of participatory democracy, good governance, and women's rights. Her key message was: *It is the people who must save the environment. It is the people who must make their leaders change. And we cannot be intimidated. So we must stand up for what we believe in.* Meanwhile in Kenya, the Green Belt Movement continued to grow and spread with over 6000 grassroots nurseries and tens of millions of trees planted across Kenya.

In 2004, Wangari Maathai was awarded the Nobel Peace Prize, becoming the first African woman to be awarded the Prize. In presenting her with the Peace Prize, the Nobel committee hailed her for taking "a holistic approach to sustainable development that embraces democracy, human rights and women's rights in particular" and for serving "as inspiration for many in the fight for democratic rights."

Wangari Maathai passed away in 2011. Even her last wish to be buried in a casket made of hyacinth, papyrus, and bamboo, echoed her life's mission to save trees. Mama Miti or 'the mother of trees' as she was fondly called in Swahili left behind an inspiring legacy of millions of trees that sustain their land, planted and nurtured by the thousands of women whose lives she touched and changed in many ways. She exemplifies how one woman can be a powerful force for change.

The author worked at the Centre for Environment Education in Ahmedabad for over three decades, where she was engaged in instructional design for educators and children. She is now an independent consultant, editor, writer, translator, storyteller and blogger. She can be reached at < mamata.pandya@gmail.com >.

Is writing a dying art?

Sanjhee Gianchandani

Ever looked at the writing section of an English main coursebook for students and wondered why they're still required to write handwritten letters and postcards at a time when every written piece from emails to WhatsApp messages is mediated by technology? Would the next generations ever even need to pick up a pen to write, let alone learn about obsolete genres of communication, especially as most students do not really enjoy the skill of writing *per se*? This piece examines the current scenario, encourages focusing on the assessment parameters instead and offers creative suggestions to keep students engaged for them to churn out relevant and meaningful texts in genres they're familiar with.

The story so far

Let's look at a common scenario in an Indian classroom where writing is being taught.

- The teacher directs students' attention to the writing section of the chapter.
- The writing format has been provided in the book which he/she asks them to refer to. They read the writing question given.
- The task is now set with no or negligible discussion.
- Students write the answer and hand it over to the teacher.
- The teacher checks the format, spelling, and grammar of the piece and marks the corrections in red ink.

- The writing lesson ends with/without having the students make the corrections.

Till about 2020, when the first draft of the National Education Policy was released, most schools were following the same pattern of teaching writing. Additionally, most boards across the country included a rigid and outmoded writing curriculum comprising genres such as informal letters, formal letters (to the editor, of complaint, leave applications), newspaper reports, magazine articles, postcards, diary entries, notices (lost and found, events), posters, invitations, short stories, and essays arranged grade-wise. Some of them even have fixed templates into which students need to put their content according to the question asked. Shobha Sinha describes this very accurately in her paper 'Reading without Meaning: The Dilemma of Indian Classrooms' (2012), in the context of early classes: "The only point that is being made is that when stories or other texts are used only to focus on language components excluding meaning."

Moreover, the Indian education system of encouraging the process of cramming the necessary information and regurgitating it on exam papers has proven to be detrimental to developing students' creative writing skills. Devi Kar, a veteran educator writes, "I remember an oft-repeated joke that you could write a good essay on almost any topic if you prepared just a single essay on God. So, if you were asked to write an essay on 'a rainy day', you could write about God's natural creations, which included the sky and earth, sun and of course rain, and then move on to a rainy day." Another critical observation in this regard is that in India, English is taught very differently than in other non English speaking countries. In India, educators

tend to focus more on the syntactical construction of sentences, grammatical correctness, and the text type or genre. Whereas other ESL/EFL (English as a second language/English as a foreign language) countries emphasize the discoursal aspect of the language and pay close attention to the 'process' over the 'product'.

What could be done?

While crafting the learning objectives for a writing lesson plan, educators must ensure that there is a proper process followed beginning from brainstorming to jotting down rough notes to making a draft to editing and revising the draft and finally to submitting the final version. A good writing lesson must include the following elements:

i. Engage: Set the hook and get them thinking about the topic.
ii. Explore: Facilitate learning by discovering and demonstrating new skills, exploring key concepts and beginning to probe. Ask inquiry-oriented questions while students share their ideas and make predictions.
iii. Direct instruction: Communicate new learnings, provide clarifications, justifications, new vocabulary, and definitions.
iv. Guided instruction: Provide the template and demonstrate one using sentence starters/prompts.
v. Independent practice: Adapt instruction and build in scaffolding to help students achieve independence in writing.
vi. Wrap-up: Consolidate, discuss responses, and do error correction if required.

While we debate over how to make writing interesting, let us delve deeper into how to manage teaching writing in the first place. Instead of making the writing task mechanical, a systematic and balanced approach must be adopted so that the text does not appear like a mere assemblage of words. While assessing students' writing, there should be an equal focus on the following parameters:

• Coherence and cohesion – This means how sentences are linked using connecting words and linkers, how paragraphs must be connected, and also how ideas must be transitioned from one to the next.
• Grammatical range and accuracy – This is the use of correct grammar and syntax while constructing sentences. It also includes the felicity of expression using spelling, punctuation, register.
• Lexical resource – This refers to the topic – related and relevant vocabulary and structures being used in the written text. It also suggests how texts can and should be written using brevity and accuracy pivoting on the topic at hand instead of free-length essays which fail to highlight the main line of argument.

Types of writing

With the proliferation of technology, letters have been replaced by emails, articles by blogs, invitation cards with text messages, notices with infographics, and postcards with photo journals. Unfortunately, the curriculum has not yet adapted to these genres and continues to concentrate on the archaic ones. Instead of scurrying around the curriculum to find the new-age writing genres, let us understand what the broad types of writing that students must learn are.

1. **Expository writing:** This refers to a text that aims to describe, explain, or inform the reader about any topic. A key feature of this non-fiction writing style is that there is no opinion or agenda – the author only wants to convey information. Newspaper reports, notices, scientific journal entries, or even an events calendar fall under this category.
   Classroom tip: Instead of getting students to write a newspaper report right away, ask them to first create a web page or a Wiki page with that news. Show them popular news websites for reference. They would then be forced to think of a headline, the main points, and the supporting details and it would prove to be a more engaging activity than writing a bland report.

2. **Descriptive writing:** This is a style of writing that involves a detailed description of a place or person, which is intended to create a vivid picture in the reader's mind and give them a better feel of the story. It uses minute details to create a clear picture while immersing all or most of the senses. Writing stories, descriptive paragraphs (about people, places, events,

things), diary entries, and poetry fall under this category.

Classroom tip: Encourage students to maintain their diaries online to keep them hooked to the process of writing every day. Instead of paragraphs, encourage them to write blogs interesting enough for their friends to read. Get their creative juices flowing by asking them to create graphic stories instead of stories and write micro-poetry instead of regular poems.

3. **Persuasive writing:** This type of writing is written to persuade the reader of something. It relies more on opinions than facts. A political leaflet, a brochure, an advertisement, an opinion piece/ magazine article, a letter to the editor or a book review fall under this category.

Classroom tip: Get students to create an infographic on Canva or a PowerPoint presentation to create brochures, leaflets, etc. There are many free templates available for use on the internet. They could also create a Facebook post or a tweet for spreading awareness about an issue with the same content that they would use in a letter to the editor. This would align perfectly with their technologically capacious scheme of things.

New-age writing genres

Not only 'how' we are writing but 'what' we are writing is also changing rapidly. To transform writing classes from dull and tedious to relevant and awaited, educators can and must experiment with genres. Attempt giving off-beat, topical themes that cater to one or more of the following genres with the same tasks prescribed in the syllabus and see it work magic in the classrooms.

- Cli-fi: Everyone is talking of climate change but this genre amalgamates it with fiction.
- Bizzaro: Strange and fascinating but fun to read and thought-provoking texts.
- Fanfic: This is fiction but written by a fan of a certain movie or book.
- Cyberpunk: a genre of science fiction set in a lawless subculture of an oppressive society dominated by computer technology.
- Mythopoeia: texts about myth-making.

This is not an exhaustive list. You can google emerging genres and get students to write something on the ones of their choice.

Getting students to write

Stories come naturally to students but most of them are reluctant when it comes to writing. Here are some pointers to keep in mind to get students to write:

- Students need time to write every day – Allot 10 minutes for free writing every day. Do not link it to assessments or constrain it to genres.
- Provide writing projects with a purpose and an authentic audience – make students write blogs and posts that would be read by an external audience and have some impact outside the classroom.
- Students need to see examples of good writing – make them read different kinds of writing including well-written books, real-world pamphlets, attractive book reviews, carefully drafted emails, creative advertisements and anything else you can lay your hands on.
- Get students to talk about writing – expand their horizons, involve their peers and see their writing flourish.
- Provide one-on-one feedback – students think and express themselves differently. Talk to them about their strengths and ask guiding questions to help them focus on their improvements.
- Celebrate – give them instant rewards for writing to motivate them to continue.

To conclude, while we wait for the new syllabi to be rolled out, let us work on fortifying the existing methods implemented in a writing lesson, cement our assessment parameters, innovate content using topical themes and contemporary genres and help students become confident writers with clear voices of their own.

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The author works as an English language curriculum designer and editor. She has a Master's degree in English from Lady Shri Ram College for Women, University of Delhi and a CELTA from the University of Cambridge. She has about seven years of experience working as an English language assessment specialist, a writing/speaking examiner for various international examinations, an item writer, and a content developer for the K-8 segment. Additionally, as a consultant editor with various renowned publishing houses, she has edited over 100 books ranging from academic to fiction, non-fiction, poetry, and children's writing. Her articles on ELT pedagogy and learning strategies have been published in several educational magazines and blogs. She can be reached at < sanjheegianchandani28@gmail.com >.

India's investment in education

Sushama Yermal

Budgetory allocations to education

Education, an important service under the social sector, is on the concurrent list of legislative responsibilities as per the Indian constitution, shared by the union and state governments. Preparing a policy outline and monitoring the overall status is done at the national level, while most of the routine matters including recruitment, administration, and assessment are managed at the state level along with local government bodies. Funding of educational services comes from both the central and state governments. This article looks at educational expenditure in India and how well the union budget and other resources contribute to meet the same.

The share of finances allotted to each department/ministry is expressed as a percentage of the whole budget as well as that of the national gross domestic product (GDP). Since following the curve for all the years post independence is cumbersome, it is easier to understand the historical trends of allotments to a given sector or department in India by looking at percentages through the five year plans.

Expenditure on education in the five year plans

(Rs. in 10 millions)

	In Current Prices	at constant (1970-71) Prices	% of total Plan outlay
First Five Year Plan	153	304	7.86
Second Five Year Plan	273	526	5.83
Third Five Year Plan	589	966	6.87
Fourth Five Year Plan	786	764	5.17
Fifth Five Year Plan	912	585	3.27
Sixth Five Year Plan	2835*	1047	2.59
Seventh Five Year Plan+	6383	1894	3.55

Note * Includes 'actual' expenditure for the first 3 years, 'revised' expenditure for 1983-84, and outlay for 1984-85.
+ Outlay (draft)

From Reference 12

Over the 35 years from 1951 to 1985, the budget outlay for education went down from 7.8 per cent to 3.5 per cent even though the monetary sum itself numerically increased.

In 1964-66, the Kothari Commission anticipated the percentage of education expenditure to go up from 2.9 per cent of the annual budget at that time to 6 per cent by the year 1985-86, estimating an annual increase of 10 per cent in the educational budget. The new education policy of 2021 also recommends that 6 per cent of the budget every year be set aside for education to achieve better schooling among the youth. But the funds allocated to education have remained much lower than this percentage through the years, ranging from 2 to 4 per cent.

Total educational expenditure

In addition to the union budgetory outlay, states and union territories also make budgetory allocations to education. Comparatively, the budgetory outlay for education by the states is about three times the contribution by the centre.

Plan	Central Government	State Government	Total	
First Five Year Plan	25	75	100	(153)
Second Five Year Plan	25	75	100	(273)
Third Five Year Plan	26	74	100	(589)
Fourth Five Year Plan	33	67	100	(823)
Fifth Five Year Plan	30	70	100	(930)
Sixth Five Year Plan*	22	78	100	(2945)
Seventh Five Year Plan	37	63	100	(6383)

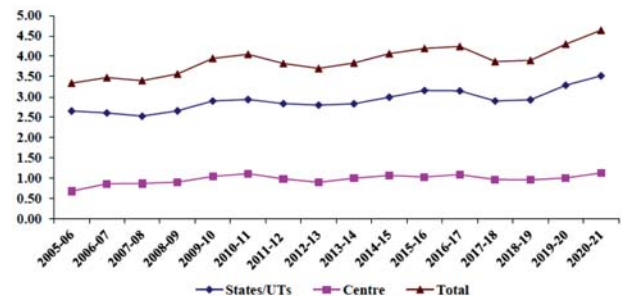Note: Figures in ( ) are Rs. in 10 millions.
* Likely expenditure.
Source: Tilak (1989b:466).

From Reference 11

Looking at more recent data, the same ratio of contributions continues, expressed as per cent of GDP. The central budget itself sets aside a considerable part to be distributed to the states.

From Reference 3

The Fourteenth Finance Commission (FFC) had tabled its report with a recommendation of

S No	Year	GDP at current prices (at factor cost) (Rs. in crore)	Total expenditure on education by education departments (Rs. in crore)						Total expenditure on education by education & other departments (Rs. in crore)					
			States	Centre	States + Centre	States as % of GDP	Centre as % of GDP	(States + Centre) as % of GDP	States	Centre	States + Centre	States as % of GDP	Centre as % of GDP	(States + Centre) as % of GDP
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
1	2000-01	1991982.00	54572.84	7925.25	62498.09	2.74	0.40	3.14	72290.53	10195.95	82486.48	3.63	0.51	4.14
2	2001-02	2167745.00	56810.73	8036.98	64847.71	2.62	0.37	2.99	65746.19	14119.52	79865.71	3.03	0.65	3.68
3	2002-03	2238200.00	59472.29	9089.25	68561.54	2.54	0.39	2.93	69350.70	16156.63	85507.33	2.97	0.69	3.66
4	2003-04	2622216.00	62867.46	10177.47	73044.93	2.40	0.39	2.79	71978.28	17100.97	89079.25	2.74	0.65	3.40
5	2004-05	2971464.00	68169.62	13111.23	81280.85	2.29	0.44	2.73	79668.14	18025.96	96694.10	2.65	0.61	3.26
6	2005-06	3390503.00	76660.54	17823.16	94483.70	2.26	0.53	2.79	90018.94	23209.77	113228.71	2.66	0.68	3.34
7	2006-07	3953276.00	86466.89	23873.47	110340.36	2.19	0.60	2.79	103147.47	34236.52	137383.99	2.61	0.87	3.48
8	2007-08	4582086.00	98609.88	26769.75	125379.63	2.15	0.58	2.74	115877.90	39919.37	155797.27	2.53	0.87	3.40
9	2008-09	5303567.00	118386.73	34435.67	152822.40	2.23	0.65	2.88	141091.25	47977.59	189068.84	2.66	0.90	3.56
10	2009-10	6108903.00	150194.39	39941.69	190136.08	2.46	0.65	3.11	177232.79	64023.23	241256.02	2.90	1.05	3.95
11	2010-11	7248860.00	181604.73	51905.38	233510.11	2.51	0.72	3.22	212817.50	80660.73	293478.23	2.94	1.11	4.05
12	2011-12	8736329.00	209830.99	60260.79	270091.78	2.40	0.69	3.09	247855.86	86074.52	333930.38	2.84	0.99	3.82
13	2012-13	9944013.00	233124.92	66087.62	299212.54	2.34	0.66	3.01	278375.27	89757.60	368132.87	2.80	0.90	3.70
14	2013-14	11233522.00	261737.14	71494.77	333231.91	2.33	0.64	2.97	318249.79	112629.03	430678.82	2.83	1.00	3.84
15	2014-15	12467969.00	292386.00	68925.78	361311.78	2.35	0.55	2.90	373467.32	133391.82	506849.14	3.00	1.07	4.07
16	2015-16	13771874.00	319808.70	67346.62	387155.32	2.32	0.49	2.81	435229.55	142562.97	577792.52	3.16	1.04	4.20
17	2016-17	15391669.00	356080.31	71930.65	428010.96	2.31	0.47	2.78	484777.08	168322.25	653099.33	3.15	1.09	4.24
18	2017-18	17090042.00	378542.46	79992.63	458535.09	2.21	0.47	2.68	495593.80	166557.65	662151.45	2.90	0.97	3.87
19	2018-19	18899668.44	416045.14	77715.41	493760.55	2.20	0.41	2.61	554442.06	182139.19	736581.25	2.93	0.96	3.90
20	2019-20 (RE)	20074855.79	479239.47	92664.72	571904.19	2.39	0.46	2.85	661362.83	201754.72	853117.55	3.29	1.01	4.30
21	2020-21(BE)	19800913.82	528299.93	97074.02	625373.96	2.67	0.49	3.16	696090.85	223054.33	919145.19	3.52	1.13	4.64

From Reference 3

Note: (i) GDP figures have been taken from press note received on 31-05-2022 by National Accounts Division, CSO, MOSPI.

increasing the states' share in the divisible pool of central taxes from 32 per cent to 42 per cent every year[5]. In a spirit of strengthening cooperative federalism in the country, the union government accepted this recommendation. But this has been accompanied by a reduction in the union government's plan grants to states. This change has happened in view of enhanced 'untied' resources available with the states. However, in this changed structure, the overall adequacy of budgetary resources for school education, to a large extent, will be dependent on how much priority is accorded by the states to this sector in their budgets.

Contribution by other departments, such as Ministry of Culture, Ministry of Labour and Employment, Ministry of Minority Affairs, etc., to education is significant too, adding more or less 1 per cent to the kitty of central and state departments of education.

Additional funding by local governments and private sources (including fees) amounts to 20 to 40 per cent of the total educational expenditure. Though fees and other voluntary contributions come from private sources, it is accounted by and spent on education as per the governmental rules and procedures and they form part of public expenditure in India[11].

Contribution of resources to education, by sources (per cent)

	1950-51	1960-61	1970-71	1980-81	1981-82
Government sector					
Central and state governments	57.1	68.0	75.6	81.7	79.9
Local governments (Zila Parishads, Municipalities, Panchayats)	10.9	6.5	5.7	4.4	8.4
Private sector					
Fees	20.4	11.2	12.8	8.2	8.4
Endowments, etc.	11.6	8.3	5.9	5.4	3.2
Total	100.0	100.0	100.0	100.0	100.0

Source: 1980-81 and 1981-82: Tilak (1991);
Others: Tilak and Varghese (1985)

From Reference 11

It is interesting to observe the trends of educational funding in comparison to other areas of the social sector. As the table below shows, education, sports, and arts and culture together have accounted for almost half of the budgetory share over the decades.

Composition of expenditure on social services
(Revenue and Capital Accounts)
(per cent of total expenditure on social services)

Item	1990-98	1998-2004	2004-08	2008-10	2010-14
	Average				
1	2	3	4	5	6
Expenditure on social services (a to k)	100.0	100.0	100.0	100.0	100.0
(a) Education, sports, art and culture	51.9	52.6	47.3	44.3	46.9
(b) Medical, public health and family welfare	15.7	14.2	12.9	12.0	12.3
(c) Water supply and sanitation	7.3	7.6	8.2	6.7	4.6
(d) Housing	2.9	2.9	2.9	3.1	2.9
(e) Urban development	2.4	3.2	5.4	8.7	7.3
(f) Welfare of SCs, STs, and OBCs	6.6	6.3	7.0	6.9	7.5
(g) Labour and labour welfare	1.4	1.1	1.1	1.0	1.1
(h) Social security and welfare	4.4	4.7	6.5	9.4	10.3
(i) Nutrition	2.2	2.2	2.5	3.1	3.3
(j) Expenditure on natural calamities	2.8	3.3	4.0	2.7	2.1
(k) Others	2.4	2.0	2.2	2.2	2.0

Source: State governments' budget documents.

From Reference 6

Percentage of government expenditure on education by every country varies widely ranging from less than 1 per cent to more than 10 per cent of the GDP, but the world average of educational spending is at 4.1 per cent, still higher than our current central budgetory outlay for education. Another way to understand educational funding is to look at the total annual expenditure on education in comparison to the GDP. This includes local, regional, national government funding as well as transfers from international sources to the government. From this point of view, the total educational expenditure in India has gone up from 11 per cent to 16 per cent of the GDP in the last 20 years and has varied over the previous years too.

From Reference 2

Current budget

The demand note from the Ministry of Education for the year 2023-24 estimates an expenditure of Rs. 68,804.85 crores for literacy and school education. This amount has been allocated fully in the budget allotment for the upcoming financial year, though the total grants requested was higher than this figure. The present allocation is Rs. 5,355.48 crores more than the educational budget presented for the current financial year, which was later revised to Rs. 59,052.78 crores, bringing the difference to Rs. 9,752.07 crores.

The department of higher education is separately allocated a sum of Rs. 44094.62 crores.

The final figure may be available only after any possible revisions of the allocations, but the allocation amounts to 2.9 per cent, a stature that has remained the same for the past seven years in spite of a raise by Rs. 8,621.75 crores from last year's total (central) outlay for education.

Of the outlay for school education, as usual major portions are ear marked for (a) fund transfer to states and union territories for centrally sponsored schemes like samagra shiksha and mid-day meal (b) funding autonomous bodies like the Kendriya Vidyalaya Sangathan and Navodaya Vidyalaya Samiti[1].

Funding needs of education in India

Similar to many services of the social sector, it is no surprise that several studies have reported salary of personnel as the largest portion of total educational expenditure. Evidently, it is important to employ quality teachers and to pay them well. Funding is also necessary to maintain and expand infrastructural facilities and ensure availability of adequate resources to make the process of teaching-learning effective. Distribution of outlay for various components of the educational enterprise still shows that the budgetary plan covers only salaries and cursory support/encouragement to selected few among students.

According to a study published in 2009, at the repeatedly mentioned coveted outlay of 6 per cent GDP, the education budget isn't by itself sufficient even to pay starting level salaries to teachers at the primary and secondary schools. Under all reasonable scenarios and maximal favourable assumptions, the feasible salary that can be paid to schoolteachers remains substantially less than the recommendations of the Sixth Pay Commission. It may need 15 per

cent of the GDP over a sustained period just to be able to pay teachers.

The proportion of the salaries of teachers in the total school budget is substantially lower in government schools than in private schools, at an average of about 70%. Considering the cost of teachers' training, inspection costs and other departmental staff, the final available amount may be 60% to 65%. This share of spending on teachers' emolument represents a very liberal assumption in favour of the teacher, since the remaining share of 35% is to cover all capital expenditure on school infrastructure building and maintenance, all school administrative and supervisory officers, curriculum planning set up including the District Institutes of Education and Training and State Councils of Educational Research and Training, provisions of free textbooks, and annual examination, etc[8].

Further support of this bleak view comes from state education finances report 2020, which states that 'teacher training' and 'quality' have the least priority in school education finances. The share of education finances dedicated towards 'teacher training' has been extremely low and was less than or equal to 1 per cent for six states during FY 2016-17. The situation was similar in FY 2017-18, except for Tamil Nadu, which spent 5 per cent of the total school education funds on 'teacher training'. The proportion of school education finances dedicated towards 'quality' initiatives including ICT infrastructure, ranged between 1 per cent and 3 per cent. Similarly, the share going into 'monitoring and inspection' of schools also ranged between less than 1 per cent and 3 per cent (see table on page 43).

In ASER (Annual State of Education Report) 2009, a new component PAISA was introduced to understand money. Like the other components of ASER, the first step was at the ground level. In every sampled village in the country, a government primary school was visited. Questions were asked about how much money came to the school, when it came and how it was spent. Interestingly, many teachers in schools did not know how much is to come and what they can do with it. The PAISA component of ASER was the first time a national attempt was made to understand fund flows at the ground level[7].

The situation is far from encouraging when coupled with the fact that the existing number of teachers is not really enough for the student population. The Tapas Majumdar Committee in 1999 recommended

Table: Distribution of total school education expenditure across functional areas in 6 states

Functional area	Bihar		Himachal Pradesh		Odisha		Rajasthan		Tamil Nadu		West Bengal	
	2016-17	2017-18	2016-17	2017-18	2016-17	2017-18	2016-17	2017-18	2016-17	2017-18	2016-17	2017-18
Administration	4%	3%	3%	3%	2%	2%	4%	3%	2%	2%	6%	4%
Equity and inclusion	2%	2%	1%	2%	8%	8%	2%	3%	1%	1%	1%	%
Incentives to students	19%	13%	3%	3%	11%	8%	3%	4%	10%	8%	11%	12%
School infrastructure	5%	6%	5%	3%	5%	5%	2%	1%	3%	2%	2%	3%
Monitoring and inspection	0.2%	0.4%	2%	3%	2%	2%	1%	1%	3%	3%	1%	1%
Quality	1%	1%	1%	1%	3%	3%	1%	2%	1%	1%	3%	2%
Teacher salaries	69%	73%	84%	84%	68%	71%	86%	84%	79%	77%	76%	77%
Teacher training	0%	0.4%	1%	1%	1%	1%	0%	2%	1%	5%	0%	1%
Total expenditure	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Source: (1) State budget documents for FY 2018-19 FY 2019-20. (2) MDM: Project Approval Board (PAB) meeting minutes. (3) SSA expenditure: PAB minutes and costing sheets from School Education Shagun portal of MHRD. (4) RMSA approved allocation: RMSA PAB minutes from the MHRD portal. (5) RTI responses from state project offices of Samagra Shiksha, SSA and RMSA.

From Reference 4

the student-teacher ratio to be 30:1, which is higher than the norm of 18 to 25 in most low and middle income countries like Argentina, Brazil, China, Egypt, Indonesia, Malaysia, Sri Lanka, and Thailand[9]. Currently the ratio in government schools in India is around 36 (in 2006-07) declining from 41 in the year 2003-04[10]. The ratio is expected to improve over the years. As the usual budgetary allocation itself is barely sufficient to retain the teachers already in service, it is not clear how the additionally required teachers can be employed and paid.

Another parameter to assess the sufficiency of educational funding is to calculate expenditure per student per year. This is calculated as the ratio between gross figures of total educational expenditure and total number of enrolled students, and not as allocated sum meant only for the welfare of the students. Even though the educational budgetory figures have numerically increased, the percentage both in terms of total budget and in terms of GDP have not been encouraging. As the student population has been increasing year after year, it is easy to see that per student expenditure has been on the decline. According to a report from 2011, GOI releases Rs.950 per child per year under SSA (Sarva Shikshan Abhiyan). There are however some variations. Rajasthan and Chhattisgarh are amongst the higher spenders, at approximately Rs.1,300 per child, while Gujarat and West Bengal are low spenders at Rs.423 and Rs.575 per child per year respectively. As discussed in earlier sections, this sum is used for the overall upkeep of the educational programmes, hence is evidently insufficient to provide a comprehensively healthy ecosystem for learning.

Plenty of in-service faculty development programmes have been conducted but as often sadly reported in the news, let alone students, the teachers themselves do not pass simple tests of arithmetic and language comprehension. Despite a variety of degrees offered, the candidates armed with these are still unable to clear teacher eligibility tests. If any of these aspects are to be addressed sufficiently well, adequate funds will have to be made available specifically for each of these core requirements.

Teachers in India are often burdened with administrative duties and heavy curricular demands in addition to the sad realities of larger-than-ideal student numbers and lower-than-ideal salaries. Combined with lack of clarity regarding policy or implementation due to cascading effects at the departmental hierarchies, teachers end up mechanically completing their tasks and preparing the required reports for students or schools. Instead of complying out of compulsion, teachers should be able to rely on officials of the education department aided by mutual confidence and understanding. Their needs and inputs must be prioritized, encouraging their skills to develop organically. How spending can be decentralized yet made effective and efficient in this context is not clear: it may be good for the

departments to seriously seek advice of experts in resource utilization and auditing.

Any reforms envisaged at the policy level need further support in monetory terms for proper implementation, so as to include marginalized populations of the society. The fact that the allocation to education in the central budget has hardly increased, in view of the rising rate of inflation, is indeed a matter of concern since the outlay will only match expenses that are essentially made every year. Any improvements required on the various facets, including recruitment of the best teachers will require funding from other resources. In the years to come, we hope the department of education will be adequately funded, thus boosting the aspiration to achieve better learning outcomes.

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The author has been a researcher in biology and an educator. She taught at the undergraduate programme of IISc from its beginning. She is now freelancing as an independent advisor to academic institutes and teaching faculty. She can be reached at < ysushama@gmail.com >.

What's

Photo: Divya Choudhary
Courtesy: Alphonsus High School, Hyderabad

the ROI on our education?

Anuradha C

It's that time of the year again. It's time for the great seat hunt. No, I am not talking about the priced MLA seats of Karnataka or Rajasthan. There are even more precious seats at stake you see. It's a race against time to secure that seat for your ward in a school/college that figures on your wishlist and also fits your pocket.

However, this tiresome exercise brings different shades of anxiety and dilemma depending on where your ward stands on the marks scale. Let's broadly divide the little ones (not so little actually!) into two overarching groups – "I have the marks" group and "I let it slip" group. Now, let's trace the narrative for each of these groups and see if it could lead to a happy ending. Or to put it in crude financial terms, we'll see if the education choice is likely to bring good 'Return Of Investment' for their futures.

The road oft taken

Socially accepted career path with a high probability of success

If you thought a superhit movie like *3 Idiots* has brought a sea change in the attitude of parents towards the choice of 'safe/reputed' graduate courses, think again. The average urban middle class parent still covets that pricey engineering seat for their wards, preferably computer science – prevalently seen as the gateway to the big bucks! The MBBS fan club among parents is equally gung-ho!

The bottom line however is: Do you have the requisite marks in your kitty? Wonderful, the choices in front of you are more enticing and plentiful than your Amazon shopping cart. And available at the best prices too! You still have a problem at hand, but that's a nice problem to have – the problem of plenty. There isn't always consensus on what you want for your kids and what the kids aspire for themselves. To be fair to the parents, kids at this age do not have sufficient exposure to the world outside to know which degree course would suit their aptitude and temperament. So, the parents need to take a call, often overriding the kids' choices. However, the bottom line is that the kid is smart and knows the value of education.

Your ward has fallen short of the magic cut-off numbers? Now, this is a conundrum of sorts. It's easy for an outsider to say to the parent – "Take a principled stand, let the kid enroll into whatever course he/she can get by merit." But there are two caveats to this moralistic advice. And they are the reasons why there aren't many takers for this principled stand among parents.

Caveat #1 is simple – Why shouldn't my ward take a seat in a prestigious institution? I can afford it! Simple and unbeatable logic. The parent is used to 'buying' everything the kids aspire for in the growing years. The college seat is just an extension to this indulgence. The parent chooses to ignore the point that entering a prestigious institution is only half the battle won. Everyday, the ward has to fight innumerable battles of aptitude, learning gaps, and peer pressure. A harried mother of a 17 year old

recently asked me, "Engineering mein tuition nahi hota hai kya?" She couldn't wrap her head around the fact that degree courses mostly leave the students to their own devices. She was earlier convinced that spending about Rs 20-30 lakhs for an engineering seat was a smart move. But now, she isn't too sure. She couldn't imagine student life without private tuitions!

Caveat #2 is more nuanced – I can't entirely afford to buy a seat in a hot shot college. But I am sure of my child's potential, he/she just needs a good push, a great learning eco-system. Most 15-17 year olds are incapable of realizing what a life altering milestone the 12th board exams turn out to be. So even kids with good learning abilities flitter their time away and land up with mediocre marks. An extremely uninspiring school system might also be equal to blame. How does a parent handle this scenario? Spend a little, take an education loan to bridge the gap, do what it takes. But ensure you get that precious college admission. There are hordes of success stories of such kids turning out to be great students later. The parent's sacrifice and leap of faith turning out to be an eye opener for them, inspiring them to take their education seriously henceforth.

Now let's do the math – to evaluate the recovery on investment. Just like any profitable business proposition we expect the money invested in a child's education to yield life-long financial stability and increasing earnings. Take this bizarre case of spending Rs 20-30 lakhs for a computer science engineering admission. That's about Rs 5-7 lakhs per annum. Statistics from the Indian labour market show that more than 70 per cent of the BE graduates earn something between Rs 2 and 4 lakhs per annum in the first few years of their career. More likely the ones who secured a merit seat are the ones in the 30 per cent bracket who earn a lot more. For now, let's ignore the lakhs spent in exorbitant school fees in the early student years. In crude financial terms, this is a very poor business deal your child is entering into!

The road less travelled

There is a small but steadily growing voice among some parents that the education system at present is actually hindering and handicapping the natural learning abilities of a child. Apart from being a money guzzler, the system also saps the creativity and confidence in young kids by subjecting them to a cruel rat race.

With the advent of COVID, a child not attending school but learning from home became a distinct possibility. Why not extend the idea forever, some parents argue. Just like how the stigma around 'working from home' fell away, the 'homeschooling' concept is also slowly taking root. Not as an exotic idea for privileged kids, but as a smart move made by an educated and aware parent in ordinary circumstances. The parent gets to finetune the pace of learning to suit their ward's aptitude and interests. The children are free from insane competition in their early years. They tend to grow up as confident and independent individuals. The requisite milestones such as 10th and 12th boards need to be tackled but there are plenty of private learning aids available for this to complement homeschooling. I recently heard the story of an entire class of 26 children who dropped out of their school in Chandigarh and took their boards individually through the NIOS route. And scored excellent marks!

A major upside of this option is the sheer amount of money saved in school fees! My cousin returned with a coveted admission form of a reputed private school in Bangalore last week. But he is flummoxed at the idea of paying Rs 1.75 Lakhs for putting a 3-year-old in school! Since then he has been busy building a WhatsApp group of parents willing to try out homeschooling. Will keep the readers posted on how that story goes ....

However, the idea of homeschooling is viable only when the parents are totally secure in their decision and capable of devoting time and energy to mentor the child full-time. Although it's easy to preach about the superiority of this option, it is extremely difficult to implement and subject to social prejudices.

A vast majority of parents are going to stick to the tried and tested path during the school years. But I urge parents to exercise caution before making the 'paid seat' leap while picking a graduation course. It's a risky choice, best to be avoided if the only motivation is social acceptability or making a feel-good choice.

Just as an aside. Did you know that the paid seat rates in Karnataka this year are slightly higher than usual? Its election year you see, college managements need to use the fees earned through the management quota to offset the expenses incurred by their political masters!

The author is an IT industry drop-out after several years of slogging and money-making. She is now working freelance as a corporate technical trainer and content writer. She is hoping to channelize her passion for writing into a satisfying experience for herself and a joyous experience for her readers. She can be reached at <anuradhac@gmail.com>.

Freshwater rock pools

Geetha Iyer

Across the world there exist within the large biomes, small spaces with unique characteristics, hosting specialized diversity of life. Such spaces or habitats as they rightly deserve to be called have hardly received any attention or recognition, except for some interested ecologists and geologists studying them. But that is changing and some of them at least have begun to be taken more seriously and studied. Through the next few articles, I introduce you to some of these specialized habitats.

Freshwater rock pools are a unique freshwater system. They occur all over the world in most biomes, especially predominant in rocky areas. They are known by various local names. South Americans call them oricangas; they are known as 'gnammas' in Australia, 'lithothelms' in Bulgaria, 'tinajas' in Mexico and Western USA and 'Opferkessel' in Germanay. Shallow rock pools with a flat base are often referred to as pans. Despite their presence worldwide they are poorly studied aquatic ecosystems. Had it not been for a visiting ecologist from UK, I would not have known the significance of, or been introduced to, the rock pools that were present in the rocky outcrops surrounding the Rishi Valley School campus.

All kinds of depression that occur in rocky substrata and contain fresh water, temporarily, permanently, or periodically are referred to as 'freshwater rock pools'. These pools host their own unique diversity. Worldwide they are perhaps some of the oldest freshwater habitats in existence. Rock pools are precipitation dependent, i.e., they are rain-fed. The depressions in rocks (that hold water to form the pools), are formed due to weathering and erosion. The size and shape of the rock pools are dependent on the rate and pattern of weathering. The nature of the rocks will give you an idea of the age of these rock pools. Some formed on ancient mountain ranges such as the Western Ghats could be quite old while others that are carved out of sandstone or limestone hills of recent origins could be relatively young.

These are different from the small rock pools that form along the coast lines. They are also not to be confused with the different quarry ponds or pot holes in floodplains that get filled with water. Such pools are filled due to overflowing ground water or water from rivers and streams. The organisms found in such pools are brought along by the flowing water. They will not survive when these pools dry out. The freshwater rock pools are rain-fed and have organisms adapted to survive the changing conditions of the pool, including drying out.

Characteristics of rock pools

The characteristics of the rock pools including the properties of the water within are generally determined by the kind of rocks in which these pools are formed as well as the climatic conditions. For e.g., rock outcrops at various elevations in the Western Ghats are composed of different bedrocks such as laterite and basalt. Rocks in Andhra Pradesh or Madhya Pradesh and some parts of Tamil Nadu are limestone rocks. Some parts of Aravallis have sandstones, marbles, etc. So the properties that govern the ecosystem within the pools on these rocky hills will naturally be different and therefore have a different environment and support varied diversity. For e.g., sandstone and limestone rocks are easily erodible than granite rocks. Hence, the pools on such rocks face the possibility of drying out early. In general any aquatic habitat that holds water periodically will experience the cyclic wet and dry phases.

Since these are temporary wetlands, the danger of drying out is a factor to be addressed by its inhabitants. The water may be present only for a few

Photo: Geetha Iyer

Rock pool from Western ghats of Tamil Nadu

Pantala flavescens female
Photo: Wikipedia

days or may be there for the entire year. Similarly, the volume of water within these pools can fluctuate. Climatic conditions could drive the characteristics such as pH of the water, temperatures, etc. Organisms inhabiting these pools thus need to adapt to conditions ranging from desiccation to flooding, and stress tolerance due to changes in environmental conditions.

Rock pool ecosystem

The rock's physical and chemical properties are the most important abiotic factors that influence, affect, and support the biodiversity within the pools. The local climate, seasonality, base rock, and rainfall patterns can influence water chemistry. Rock pools are oligotrophic systems that are highly sensitive to diurnal and seasonal changes. Therefore, the dynamic water chemistry influences the occurrence of various life forms.

Organisms living in rock pools are classified into two groups – active and passive dispersers, based on their life cycle and dispersal strategy. Passive dispersers stay put in the pool during dry periods or move to other pools using water, wind, or animals; whereas active dispersers don't stay and actively move away as the pools begin to dry. They are not dependent on external agencies to move away.

Rotala sahyadrica, Photo: Mayuresh Kulkarni

Passive dispersers: Those organisms that choose to stay in the pools adopt certain strategies to combat desiccation. Certain species of Crustacea, Turbellaria, and Rotifera lay their eggs to coincide with the dry season. This is a resting stage and the eggs will hatch as soon as wetness begins. Some other species survive by forming a water filled vesicle around them. This is called encapsulation. Some species of Tardigrada form 'tuns'. The limbs of these animals are contracted and then covered by a waxy substance on the surface that protects them from desiccation. This is called tun formation. Passive dispersers have shorter periods of development from egg to adult stage to rapidly colonize the pools unlike active dispersers that take a longer time to mature. As in all groups there are always exceptions to such rules.

Active dispersers: These are present in the rock pools during the wet phase and begin migrating before the pools dry out. They are generally insects that can fly in search of other rock pools. Some exceptions to this have also been noticed. Some of the larvae of active dispersers such as certain species of midges remain in a state of diapause to overcome the dry phase. Some like the *Aedes vittatus* produce desiccation resistant eggs to survive. Some dragon flies adopt risky strategies to maximize their survival. Variously called the globe skimmer, globe wanderer, or wandering glider, *Pantellaflavescens*, lay their eggs randomly in different pools that may be healthy or unhealthy, hoping to increase the chances of survival. The scarlet rock glider, *Trithemiskirbyi*, selects large and deep pools with a long wet period to lay its eggs. Some species of midges also select similar pools.

Reproductive success is very important for these rock pool inhabitants. Therefore, pool selection for laying eggs is important. Pools that may contain egg predators are generally avoided. This is why the strategy to choose random pools by some active dispersers is a risk-filled one.

Rock pools from India

A study of physicochemical properties of the rock pools of the Western Ghats showed that factors such as pH and conductivity followed the global pattern. It also showed that the water chemistry of the Western Ghats rock pools was mainly controlled by rock dominance and precipitation, resulting in high salinity with a moderate level of conductivity. Studies here indicated that the water quality of the rock pools was favourable for aquatic life. Diversity studies on rock pools of the Western Ghats have documented

many rare as well as novel species of plants. Around 460 species of aquatic faunal species have been recorded from rock pools around the world. High degree of endemism was noticeable. Nearly 170 species are known to disperse from one pool to another as one means of escaping desiccation.

Rock pools are oligotrophic habitats, i.e., habitats poor in nutrient content. Researchers working in Panchgani have reported that these pools hold water anywhere between 15 days to four or five months. The fauna that survive here are special and adapted to withstand desiccation. They are mostly invertebrates such as crustacean, tardigrades, and some insects.

Shruti Paripatyadar, a Pune-based entomologist and her colleagues discovered 13 new species of microcrustaceans some of which were seen only in one rock pool. They also discovered flightless forms of insect species that normally would have wings. The environmental conditions have thus lead to the assemblages of organisms, both flora and fauna, unique to the pools and not found elsewhere.

Conservation

Rock pools are found on rocky outcrops, which are not seen as productive habitats by most people. Some communities in Chaukul village near Amboli, Maharashtra, have been conserving rocky outcrops for centuries. They are important for the sustenance of the local communities; but it is often not taken seriously as they are unknown habitats, invisible to the general public since there is both the absence of data and public awareness.

Despite the presence of high biodiversity and endemism these temporary pools are highly threatened in India. Inselbergs and koppjes are common in South India, where one can find many rock pools. Why are they not conserved? Because they are considered as wastelands. Because no funding is easily available to scientists for studying them. With data being deficient, it is but natural that their importance is never appreciated or understood. The 2010 Wastelands Atlas of India by the National Remote Sensing Centre and Ministry of Rural Development documented the rocky plateaus with high biodiversity value in Kolhapur, Pune, Satara, Ratnagiri, and Sindhudurg districts, as 'barren rocky/ stony waste areas'. So they are chosen for setting up windfarms for mining and other such 'popular' money spinning projects. With climate change wreaking destruction, how many pools or species in

Rock pool with a larva of may fly   Photo: Geetha Iyer

these rock pools will survive is a question that has no answer.

Although small in size, scientists believe that rock pools influence, in ways yet to be documented completely, the environment of the larger biomes in which they are found. Researchers are of the opinion that these pools deserve to be regarded as keystone species or keystone habitats.

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The author is a consultant for science and environment education. She can be reached at <scopsowl@gmail.com>.

What is gender-affirming care?

Neerja Singh

In a growing trend the world over, there has been a significant rise in the number of teenagers openly identifying as transgender and seeking gender care. In countries that collect national data, like the Netherlands and Britain, the number of 13 to 17-year-olds seeking treatment for gender-identity issues has gone up from dozens to hundreds to thousands a year.

Gender-affirming care is an approach the medical community has adopted for embracing children and teenagers who come out as transgender. However, there has also been a contrary, right-wing backlash in some nations against allowing the young to medically transition from one gender to another.

The field of transgender care for youth has shifted in other ways too during the last decade or so. The big debate used to be about whether kids in preschool or elementary school should be allowed to live fully as the gender they identified with. Today, the debate is among clinicians on how to respond to the thousands of teenagers who are arriving at their doors. Some teens have questions about medication that suppresses puberty and others want to know about hormone-replacement treatments.

Just as striking, the types of cases have changed. The average age when a young person first comes to a clinic tends to be decreasing. Cases of teenagers coming out as trans aren't new, their prevalence is. In addition, the current caseload is around two-thirds youths who were "assigned female at birth" and identify as trans boys or as nonbinary. In the past, by contrast, most patients at gender clinics were trans girls who were "assigned male at birth."

But how does gender identity compare with sexual orientation? Sexual orientation refers to an individual's enduring pattern of emotional, romantic, and/or sexual attraction to men, women, both genders, or neither gender. It is about who a person is attracted to, in terms of their gender. Common categories of sexual orientation include heterosexual (attraction to the opposite gender), homosexual (attraction to the same gender), bisexual (attraction to both genders), and asexual (lack of sexual attraction). Gender identity on the other hand refers to an individual's deeply felt sense of their own gender, which may or may not align with the sex assigned to them at birth. It is about how a person identifies themselves in terms of their gender. Common categories of gender identity include male, female, and nonbinary (which encompasses genders other than exclusively male or female).

The key difference between the two therefore is that while sexual orientation relates to attraction, gender identity relates to self-identification. It's important to note that everyone's sexual orientation and gender identity can be unique and diverse, and individuals may experience fluidity or changes in both over time. Respecting and understanding these differences is crucial for creating inclusive and accepting societies.
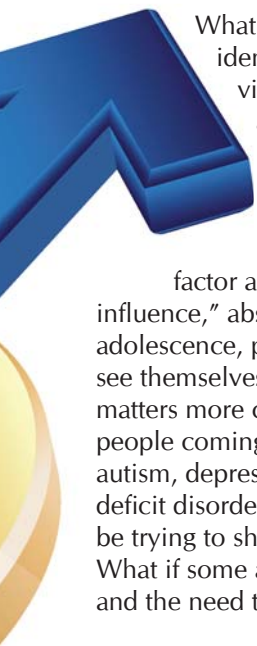
What is the reason for this rise in trans-identified teenagers? Is it that the increased visibility of trans people in entertainment and the media has reduced the stigma attached and made it possible for many kids to express themselves in ways they would have previously kept buried? But is visibility the only factor at play? How about the "social influence," absorbed online, peer to peer? In adolescence, peers and culture often affect how kids see themselves and who they want to be. To make matters more complicated, as a group, the young people coming to gender clinics have high rates of autism, depression, anxiety, and eating or attention-deficit disorders. Could some of these young people be trying to shed aspects of themselves they dislike? What if some are motivated by the support network and the need to have a cause to fight for?

There are acute ethical dilemmas involved. There is the principle of justice – which promotes access to care for trans youth – and there is the principle of doing no harm. For people who don't know much about the issues, banning the care perhaps sounds more enticing than the idea that kids are dictating what treatment they should get.

But should teenagers seek sex change at all? For teenagers who are experiencing gender dysphoria (a condition where a person's gender identity differs from the sex they were assigned at birth) and have a consistent and persistent desire to transition, seeking professional help is crucial. Mental health professionals with expertise in gender identity can provide counselling, support, and guidance to help teenagers explore their feelings, understand their options, and make informed decisions. Medical interventions for gender transition, such as hormone therapy and sex reassignment surgery, are typically not recommended for teenagers until they reach a certain age and demonstrate long-standing gender dysphoria. Ultimately, the decision to pursue any medical intervention related to gender transition should be made in consultation with healthcare professionals, the individual's parents, or guardians (if applicable), and with the teenager's well-being and best interests as the top priority.

The question is whether schools should play a role in gender affirmation. The opinions vary, depending on cultural, social, and individual beliefs. Advocates argue that schools should create a safe and inclusive environment for all students, including those who identify as transgender or gender non-conforming.

By affirming students' gender identities, schools can help reduce discrimination, bullying, and mental health issues. Schools can play a vital role in educating students, staff, and parents about gender diversity and promoting understanding and acceptance. By integrating gender-affirming education into the curriculum, schools can help reduce stereotypes, prejudices, and ignorance. As a matter of fact, schools may have legal obligations to provide gender-affirming resources, such as access to appropriate restrooms, changing facilities, and gender-neutral pronouns.

An extremely sensitive navigation is involved here, respecting parental rights while prioritizing the well-being of students. Some cultures may argue that schools should focus solely on academics and that gender affirmation should be the responsibility of families or medical professionals. The guiding principle in today's world however is a universally accepted commitment to inclusivity, safety, and the well-being of all students.

In this new world of personal freedom and choices, adults are faced with poignant dilemmas. Many parents are surprised, even shocked into paralysis when their teenagers come out as trans. They may struggle to be both supportive and cautious. Some experience unease with medical transition and argue that although 18 is the legal age to vote, and consent to medical treatment, in this one area of medicine – gender-related treatment – the age of consent should be 25, when brain development is largely complete. There are the doubters who join support groups online, struggling with seeing themselves as the barriers to their child's happiness.

Gender affirmation is an area where everyone involved must remain open to whatever comes. It's important to note that it is an ongoing process, and each teenager's journey will be unique. By providing support, resources, and understanding, we can help teenagers explore their gender identity and create a positive and affirming environment for them to thrive.

The author is a former teacher/journalist, published author and professional speaker on generational diversity with a background and training in media, having worked in advertising, public relations, documentary filmmaking, and feature journalism. She is a TEDx speaker and represents the Professional Speakers Association of India on the Global Speakers Federation Board. She can be reached at https://www.linkedin.com/in/neerja-singh/.

Learning principles that work magic

Aruna Sankaranarayanan

Teachers, across subjects, grades, and curricula, hope to impart meaningful, memorable, and motivating lessons. Whether we're discussing ancient civilizations, Euclidean geometry, or the volatility of stock markets, we would like students to be engrossed and enthused both during and after our classes. Rather than viewing students as passive receptacles, learning is effective only if learners engage actively with concepts and skills. Are there general learning principles that teachers, spanning different domains, age groups and cultures, can wield to make learning more efficient and robust?

Yes, indeed. In *How Learning Works: 7 Research-Based Principles for Smart Teaching*, Susan Ambrose, Michael Bridges, Michele DiPietro, Marsha Lovett, and Marie Norman outline a set of principles that do just that. Though the book is written with college professors in mind, the learning principles, that include both cognitive and affective factors, are just as relevant for school teachers.

Most teachers recognize the significance of prior knowledge that students bring to a learning situation and how that impacts further knowledge. Prior knowledge that is accurate, activated, and apt can aid subsequent learning, whereas inaccurate, incomplete, or inert constructs learnt earlier may interfere with learning. Thus, teachers may both assess and activate students' prior knowledge by asking students to brainstorm or create concept maps before introducing new themes.

Next, the way students organize knowledge impacts what they remember and apply. The authors believe that teachers may influence students' knowledge organization by providing pupils with tasks that allow them to form meaningful linkages between relevant concepts, with nodal points connected coherently. Initially, teachers may create concept maps of their own to see how various constructs tie into each other and then help students identify organizational

features to structure their learning more optimally. By understanding how new information fits into a conceptual space, students "recognize meaningful patterns" and are more likely to access and apply it in novel situations.

Another fundamental factor, and possibly the most important, that drives students' learning is their level of motivation. At all stages of the learning process, motivation determines how much effort students are willing to exercise. Students need clearly articulated learning goals that seem valuable to them. Further, they also need to believe that they have the ability
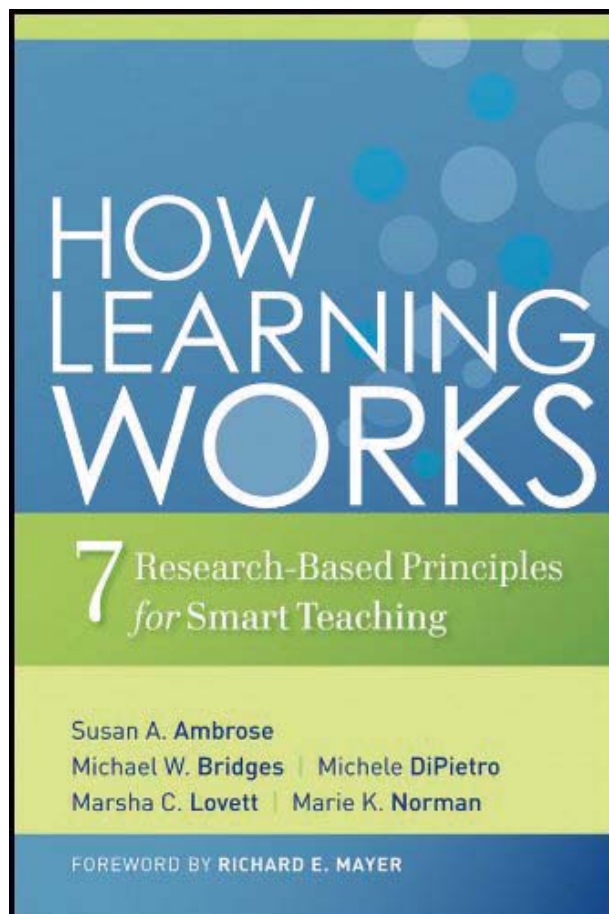
to meet the learning outcomes set for them. Thus, teachers may create an array of activities that cater to the various skill and competency levels within a classroom. All students need to feel that they are capable of meeting task demands. When students are in a learning environment that they feel is supportive and have a high sense of efficacy in their capabilities to achieve goals they deem valuable, healthy motivation is bound to result.

As teachers often impart complex skills and concepts, good teaching involves decomposing complex competencies and constructs into smaller, more manageable units. Besides giving students sufficient practice in mastering component skills, teachers also need to help students integrate the various pieces together and learn to apply their knowledge in a variety of contexts. To help students attain mastery, teachers may provide activities. A meaningful education should equip students to exhibit far-transfer, wherein they are able to apply what they have learned in classrooms to unfamiliar situations. As far-transfer doesn't necessarily occur automatically, teachers need to emphasize deep principles, underlying structures and help students identify a range of contexts where transfer might be applicable.

An essential facet of teaching is to provide students with "goal-directed practice" and targeted feedback. The adage "Practice makes perfect" isn't necessarily true unless students identify specific, actionable learning goals and perform related activities that offer an optimal level of challenge. Giving pupils targeted and personalized feedback on whether they are meeting certain criteria can both motivate and help them hone their skills to get to the next level. The right kind of feedback at the right time can be a great impetus to learning.

Excellent teaching also entails being aware of and responding to the diverse needs of individual learners. Teachers may create a classroom climate that respects the multitude of learner profiles that make up a class. Children bring a panoply of differences to the learning situation that span physical, cognitive, linguistic, social, emotional, religious, and cultural factors. As teachers, we need to examine, and perhaps, question our own assumptions and biases. To create a classroom that is mindful and respectful of all kinds of differences, we may engage in a number of practices.

Foremost, we must foster a climate that welcomes multiple viewpoints where all students feel safe to voice their opinions. We also need to create ground rules, preferably along with students, so that peer interactions are also "inclusive and respectful." Getting to know students individually can go a long way in building rapport with the whole class. Asking students for feedback on various aspects of our teaching and incorporating their suggestions into your teaching models an open mind.

Ultimately, the litmus test of a good education is whether we create self-directed learners. To facilitate this process, teachers may help students build metacognitive awareness that allows pupils to assess task demands and their own capabilities. Students may also learn to chalk out goals, gauge their progress and make adjustments to their approach. Importantly, teachers may model and impart a growth mindset to students, wherein they believe that their skills and knowledge, in any domain, may improve with the right kinds of practice. *How Learning Works* is a wonderful book that offers an arsenal of techniques for teachers to be more effective and engaging while enhancing deep learning. It's up to you to embrace them to create magic in the classroom and beyond.

The writer is the author of *Zero Limits: Things Every 20-Something Should Know*. She blogs at <www.arunasankaranarayanan.com>.

The library as playground

Alia Sinha

Illustrations: Alia Sinha

I'm an illustrator, theatre practitioner, and library worker. This illustrated essay is comprised of notes and reflections on my practice of facilitating *physically embodied play and performativity* in the context of the library – in the LEC (Library Educators' Course) and other professional development workshops for Library education offered by Bookworm, Goa between the years 2017 and 2023.

I use methods informed by applied theatre (mostly absurd games and activities).This may involve running, chasing or following each other, hiding, walking strangely, counting together, pretending the floor is covered in ice or lava, becoming machines, mythical creatures or different characters, talking in made up languages or not talking at all, making still images, and adapting storybooks into full-fledged performances.

If you are confused right now, that's probably a good thing. It's often the first reaction of participants in these sessions.

Like them, I invite you to "go with it" for now.

Playing as an approach

At its core, this type of play centres the vulnerable, breathing natural bodies of the people inhabiting a space and recognizes the agency and presence of the body in the experience of learning.

Within a classroom, conference, or workshop, the physical orientation is most often a static arrangement where a group of 'learners' are required to sit still for hours, facing the presenter/educator and process complex ideas intellectually while possibly experiencing bodily discomfort or disconnection from the session.
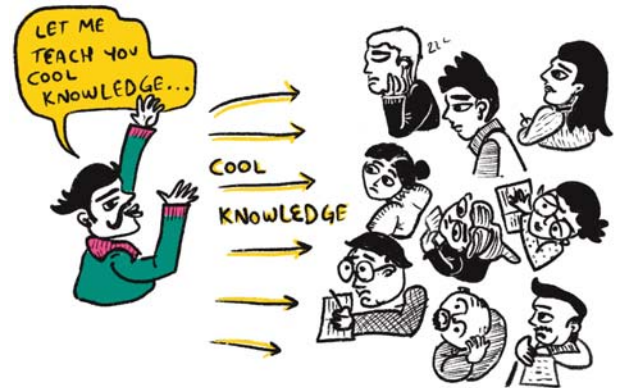
Typically, the imparter of knowledge is seen as separate from the group, in a hierarchical position of authority – as reflected by the design of the space. The flow of information and action is uni-directional going from them to the group, whose passive bodies are required to absorb this knowledge. Sessions on play shatter this structure.

The space in the centre is open – allowing for free movement and multiple configurations of bodies.

The group forms a circle, facing each other, and the facilitator is part of the circle, or weaving in and out of the space. Everyone is enmeshed in a web of feedback – responding, observing, and listening to each other. As the body moves, in harmony with the bodies of its peers – stretching, flowing, experiencing freedom – the

learning space changes radically. What was up till that point a classroom/workshop/conference becomes suddenly unfamiliar, mysterious, filled with possibility.

Physical embodiment

Each game or activity has different affective qualities. Some are just silly and funny. They make people laugh, loosen up and become softer and more open to the work. Some games work to bring the energy up, while others require vulnerability and sustained engagement with each other and a slower pace. Most strengthen the feeling of camaraderie, requiring people to cooperate and collaborate in order to "win". Others allow people to go into a state of deep rest.

Some games are improvisational, allowing the participants to build and create their own stories, others let them experience different states of flow and movement.

The connections between these different types of activities determine the flow of the session.

There are games for the whole group – played in a large circle or spread through the space and interacting with each other, games played in groups of five or three, in pairs, and those played alone. I like to typically balance these in a session so that the group experiences all of these combinations.

These games and activities can be applied to any discourse, theme, or syllabus.

My approach has been to find a way to endow concepts or context to a movement, action, or game and find connections within the larger themes of the workshop or learning session. Whether it is within the library, or for the library practitioner's own learning, embodied engagement can add dimensions to the work that precedes spoken language.

During an engagement on locating caste within the library, we played a game where people had to walk blindfolded down a path and stop when they felt an invisible line that was "built' or mimed by the rest of the group. The intent of the game is to stop walking when you feel some sort of resisting energy. This is usually a clowning game to sharpen physical and collective awareness and it's uncanny how many people can actually sense an invisible line in the room (without having seen it in advance) and stop mid-way.

Participants shared how the exercise shook them up, how it solidified something from lived experience about how caste operates in silence and invisibility. They shared how it triggered deep reflection on the theme in an unfamiliar (*embodied*) way.

Process and performance-centric play

The presence of theatre and drama education in mainstream education is minimal to negligible. Contemporary theatre in India is largely underfunded and inaccessible, which means that as adult learners, unless someone is deeply interested in theatre, it is rare to have any access to the form – especially in the urban or peri-urban context. Folk and vernacular modes of theatre (while still vibrant) are bound by caste and ethnic identity and not practised outside of those boundaries.

Theatre-based work can be process-centric and/ or performance-centric.

Process-centric work uses these modes of play and the medium for its own sake, for the effect it has on the group's trajectory through a workshop. It sees the experience of creative play as an end in itself and recognizes the psycho-social and emotive shifts such creative, embodied exploration can activate.

Performance-centric work sees a more linear trajectory, where the end result is a sharing or presentation of a devised theatrical performance.

This can be as conventional or experimental as is fitting, but always allows the group to encounter the collaborative, multi-modal, and frankly delightful process of making a play.

There are many overlaps between the two. But while you can keep doing process-centric work without including performance as an element, it is impossible to create a performance without allowing the process of exploration to happen first.

I enjoy using both, with an emphasis on the process.

In the context of LEC and other library practice workshops, participants are usually educators, community or school library practitioners, or NGO workers.

The vast majority of people I've worked with have never done theatre, have rarely experienced the act of physically-located play past their childhood, and have never been required to play in the formal setting of a professional development course or educational context. It often takes a long time to immerse in the processes – to reflect on and break out of social scripts of shyness, competitiveness, or "seriousness", and to give in to the instinct to play.

To allow for this immersion, sometimes the focus may remain at the level of playing for its own sake. Due to time constraints, we cannot always engage with performance-making, since this requires rigour, time, and attentiveness to detail – and its own set of domain-specific scaffolding.

The facilitator would need to lead the group through different elements of performance: from playing with characterization, to set design and scripting, voice and movement training, to thinking of production elements, bringing attention to sound design, direction and blocking, and allowing for lots of rehearsing and feedback.

For the facilitator to have experience in theatre would be helpful to support participants through this nitty-gritty. Although with sufficient enthusiasm and research, this isn't compulsory.

For the participants, the payoff of seeing your peers create and inhabit a story from nothing and the experience of making something with them that becomes a transient parallel reality…is unmatchable.

It is a completely a new way of being and still a fundamentally human experience.

Within the library: Supporting the play instinct

Within the library, playfulness and performance can affect space, atmosphere, interactivity, and engagement with stories and storytelling and contribute to creating a vibrant library.

Children respond very strongly to play, and it's important to recognize that children have physiological needs and rhythms that can find expression and fulfilment in physical play.

I've noticed in my sessions that it's often the practitioners who work with children already, who respond to this work and see its relevance faster than those who have not worked in the field before. These sessions aim to foreground the power of modes of story-making that transcend language, as well as a means of human connection that transcends age or social context. They experience this connection with strangers and peers. As these adult learners start to inhabit the space of playfulness, they may find it easier to create this for children.

These sessions are also meant to sensitize the library educator to the potential they hold in their own body – to encourage experimentation – using their voice, becoming a character, changing how they conduct storytelling sessions or thematic engagements.

Adapting and using storybooks to build performances is an especially powerful practice. It can change a reader's relationship to the text – it can support reading, decoding, and reflective engagement.

It can allow participants to inhabit unfamiliar or difficult contexts, and also respond to difficult themes

such as death, conflict, or emotional dysregulation. It can encourage picking up the books and stories that have been explored through performance.

To have theatre and drama as part of a library program would provide a medium of expression that supports personal and collective development in a completely new way.

For children who have not had access to theatre and performance elsewhere, exploring it within the library could open doors and windows into different worlds, give language to that which can't be spoken and give form to ways of seeing the world that don't yet exist.

The hope is that this work will feed the facilitation practice of all those who participate and provide them with a menu of activities, games, and methods to take back to their own libraries and organizations.

Some things I keep in mind as a facilitator

Reflecting on my role as a facilitator in these sessions, I'm struck by how it feels distinct from a teacher, professor, or instructor.

As the learning only happens through the act of doing, much of the session is dependent on the active presence of the participants. So one is focused on *creating the conditions that will allow them to*

participate freely and discover the work rather than on imparting a set of facts, figures, or concepts. There is no top-down flow of information. One is part of the group, located within and alongside the circle.

Establishing safety and physical boundaries is a fundamental area of attention – to know who in the group is comfortable with what extent of movement and touch. I must allow space for people to point out their boundaries – holding hands, or linking arms may be more acceptable than more intimate physical contact that theatre demands, like leaning on each other back to back.

Some participants may be older, uncomfortable with physical expression, disabled, dealing with illnesses or chronic conditions that restrict mobility or other constraints. As a medium that is so physically concentrated, theatre and play may easily become exclusionary, so it's important to design the sessions to take into consideration different participants' needs and abilities.

It is crucial to establish care for each other's bodily vulnerability and autonomy as a culture of these sessions to look out for people, to avoid injury during vigorous movement, to include everybody, and to be respectful in conduct.

The significance of language while conducting the sessions is astonishing. I have to remember to give clear instructions, repeat them, and demonstrate whenever required with the help of volunteers.

Apart from the prompts themselves (which have to be convincingly given no matter how strange they seem), the tone and approach while dealing with conflict or resistance can significantly impact the session.

I have to respond to whatever the group is feeling or thinking or doing – to become a permeable membrane that can intuit whatever the group needs in that moment and address it with lucidity and gentleness.

Feedback and debriefs during and after sessions are important to understand where people are at, and how they're processing the work.

Music can be a powerful tool during these sessions – either to accompany, prompt, and enhance certain activities. Whenever a speaker is available, I make it a point to use music.

In more recent times, I have developed a broad sense of what activities work in what combination with which group. The struggle has been to refresh these plans, to remember to take risks and try new things after sufficient research.

The session is often most successful when I come to it from a place of excited uncertainty.

What it looks like

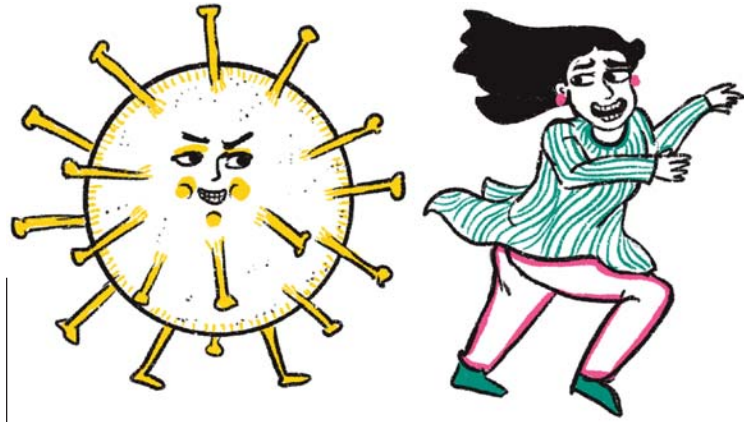You may be wondering at this point what the responses to these sessions have been.

While in the beginning it can range from confusion and tentativeness, I'm always amazed at the openness with which groups surrender to the session – often while being unsure of why they're doing it.

Playing provokes many beautiful reactions – my favourite is the sheer mirth and silliness. But it can also go from excitement to deep reflection, sometimes unlocking emotional reactions such as uncontrollable laughter or tears. It is a testament to the form, that somatic and embodied work can open floodgates of emotion and deep thought, through the simplest of things (like dancing in a room with your eyes closed).

I have often used playful frameworks to address difficult themes – there's a whole set of games around COVID 19 for example, where you're either somebody infected with COVID, or a giant COVID cell, or even a hospital for COVID patients. These usually allow for ridiculous, hilarious moments, all while dealing with a very charged and heavy topic.

The act of play feels fundamentally political – the way it can subvert traditional notions of education or of competitiveness, the way it allows for fears and anxieties to be confronted with humour, the way it centres collaborative joy and care. The potential it has to address social and political issues could be a whole other essay.

There is something about playing with other people that is disarming – that reveals sides of them you may never have imagined or had the honour to observe otherwise. It may be the way someone dances, or the way they scream while running away from a giant COVID cell. It may be a particular wittiness during some group work, or a deeply affecting dignity that comes through in a performance.

I cannot think of many spaces or situations in contemporary times that match the feeling of communion – a low soaring, shared euphoria – when a play and performance session has flowed beautifully.

Time and time again, my colleagues and I have observed groups before and after sessions of play and performance, and found the group warmer, kinder, more bonded with each other.
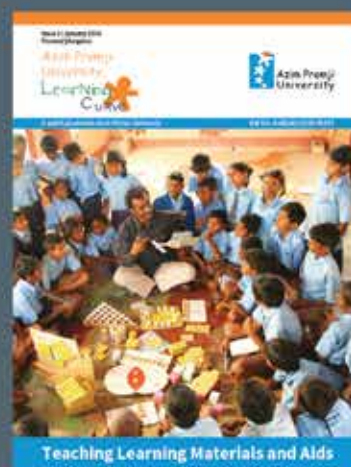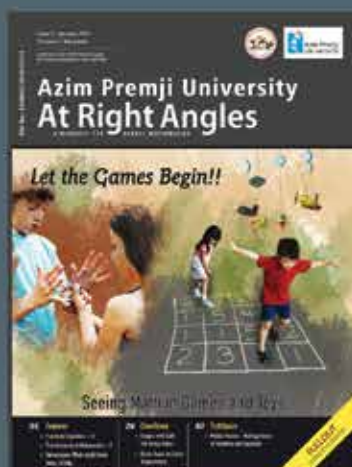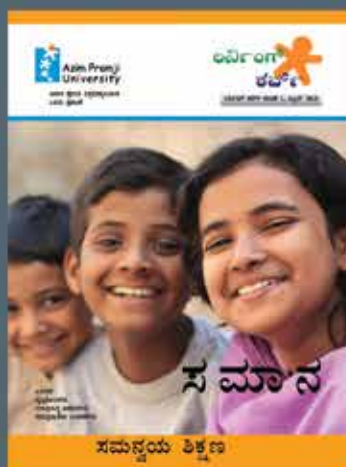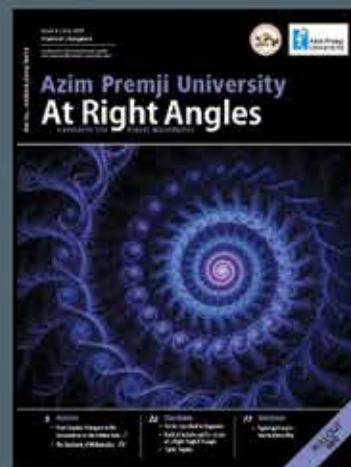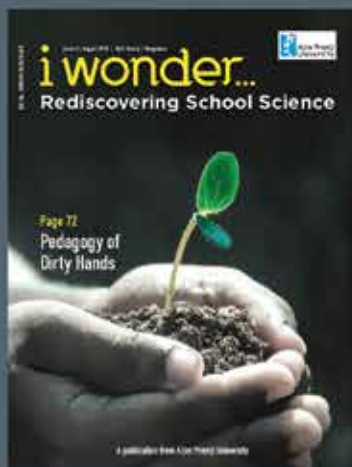
The vulnerability and openness that play enables for the participants – many of whom are practitioners and educators – seep into their other engagement with the rest of the course.

To be able to encounter these things within a learning context, feels super-charged with potential for further study. It would be exciting to track and maintain responses about the long-term effects of this kind of engagement.

I hope that playing can and will be taken more seriously within pedagogical and educational spaces in India and that more exploratory and experimental work in these fields will emerge, astonish, and delight learners in the generations to come.

The author is currently leading 'Khwab Ghar', the Library Program of Aagaaz Theatre Trust, in New Delhi. She is a theatre practitioner and freelance illustrator and you can see more of her work at www.instagram.com/minor_grace. She can be reached at <moontuner@gmail.com>.

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